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2005 Urban Water Management Plan for the City and County of San Francisco

Public Review Draft

Prepared by the San Francisco Public Utilities Commission October 2005

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Table 1



Contact Sheet

2005 Urban Water Management Plan City and County of San Francisco

San Francisco Public Utilities Commission (SFPUC)

Date plan submitted to the Department of Water Resources: Pending

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The Water supplier is: San Francisco Public Utilities Commission

The Water supplier is a: Wholesale and retail supplier

Utility services provided by the water supplier include: Surface Water,

Groundwater, Recycled Water

Is This Agency a Bureau of Reclamation Contractor? No

Is This Agency a State Water Project Contractor? No

Abbreviations

ABAG Association of Bay Area Governments

acre-feet One acre of water one foot deep (volume of water, equivalent to 326,000 gallons)

afy Acre-feet per year (flow or usage rate of water)

BAWSCA Bay Area Water Supply and Conservation Agency

BMP Best Management Practice

Ccf One hundred cubic feet (volume of water, equivalent to 748 gallons)

CCWD Contra Costa Water District

CII Commercial, Industrial or Institutional
City City and County of San Francisco

CUWCC California Urban Water Conservation Council

EBMUD East Bay Municipal Utility District
GED Gallons per employee per day
apad Gallons per capita per day

apf Gallons per flush

GWMP North Westside Basin Groundwater Management Plan (2005 GWMP)

HET High Efficiency Toilet

HHWP Hetch Hetchy Water and Power

IWSAP Interim Water Shortage Allocation Plan

LWRS Local Water Resources Study (2005 LWRS)

Master Contract Settlement Agreement and Master Water Sales Contract

mgd Million gallons per day (flow or usage rate of water)

MOU Memorandum of Understanding

RWMP Recycled Water Master Plan (2005 Draft RWMP)

RWS Regional Water System

RWSAP Retail Water Shortage Allocation Plan SCVWD Santa Clara Valley Water District

SFPUC San Francisco Public Utilities Commission

UWMP Urban Water Management Plan
WSIP Water System Improvement Program

WSMP Water Supply Master Plan

Preface

The San Francisco Public Utilities Commission (SFPUC) has prepared this 2005 Urban Water Management Plan for the City and County of San Francisco in accordance with the requirements of the 1983 California Urban Water Management Act (Act), California Water Code Division 6, Part 2.6, Sections 10610 through 10656. Appendix A contains a copy of the Act, which has undergone several amendments since it's adoption. The purpose of the Act is to ensure that water suppliers plan for long-term conservation and efficient use of California's water supplies.

The Act requires all urban water suppliers to prepare an Urban Water Management Plan every 5 years. The 2005 Urban Water Management Plans are due to the California Department of Water Resources by December 31, 2005. An urban water supplier, as defined by Section 10617, means a supplier, either publicly or privately owned, providing water for municipal purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually.



Section 1: Plan Development and Adoption

This section summarizes actions taken by the San Francisco Public Utilities Commission (SFPUC) to ensure agency coordination and public participation during in the development of this 2005 Urban Water Management Plan update (2005 UWMP) for the City and County of San Francisco (City). Information on the adoption of the 2005 UWMP is also addressed.

1.1 Agency Coordination

The SFPUC has coordinated with other appropriate City and regional agencies in this 2005 UWMP update.

Coordination with City Agencies: The SFPUC coordinated with other City agencies in developing elements of this 2005 UWMP. For example, in the development of recycled water options and groundwater options, many departments were consulted, such as the City Recreation and Parks Department, Department of public works, Department of Public Health, Fire Department, and Department of Building Inspection.

Additionally, the City agencies listed above, among others, received mailings regarding the SFPUC's intent to review the 2000 UWMP and to prepare an updated 2005 UWMP. They also received a copy of the draft 2005 UWMP and notification of the date and time of the public hearing on the draft 2005 UWMP. Comments received from City agencies on the proposed 2005 UWMP were reviewed and addressed, as appropriate. Documentation relating to these efforts and communications is on file with the SFPUC.

Regional Interagency Coordination: The SFPUC also coordinated with the Bay Area Water Supply and Conservation Agency (BAWSCA) on this 2005 UMMP. BAWSCA is an agency representing the wholesale agencies served by the SFPUC (i.e., wholesale customers of the SFPUC Regional Water System). BAWSCA was created on May 27, 2003 to represent the interests of 26 cities and water districts, and two private utilities, in Alameda, Santa Clara and San Mateo counties that purchase water on a wholesale basis from the San Francisco Regional Water System (RWS).

Regional coordination efforts with BAWSCA in the past have led to preparation of a Water Supply Master Plan (WSMP) in 2000, and adoption of an Interim Water Shortage Allocation Plan (IWSAP) in 2000, which describes an agreed-upon method for allocating water between the SFPUC and its wholesale customers collectively during shortages caused by drought.

In addition to coordination with BAWSCA, the SFPUC also contacted wholesale customers of the SFPUC RWS. Each of these wholesale customers received water supply reliability information from the SFPUC, which enabled them to complete their individual Urban Water Management Plans. Specifically, the customers received information regarding expected deliveries to them from the SFPUC RWS, including the following:

- their projected Single dry-year supply for 2005;
- their projected Multiple dry-year supply beginning 2005; and
- their projected supply reliability for years 2010, 2015, 2020, 2025 and 2030.

All current wholesale customers also received mailings regarding the SFPUC's intent to review the 2000 UWMP and to prepare a 2005 UWMP. They also received a copy of the draft 2005 UWMP and notification of the date and time of the public hearing on the draft document.

In addition to coordinating with BAWSCA and its member agencies, the SFPUC also communicated with other Bay Area water agencies, including: East Bay Municipal Utility District (EBMUD), Santa Clara Valley Water District (SCVWD), and Contra Costa Water District (CCWD). Each of these agencies received mailings regarding the SFPUC's intent to review the 2000 UWMP and to prepare an updated 2005 UWMP. They also received a copy of the draft 2005 UWMP and notification of the date and time of the public hearing on the draft document.

Comments received from BAWSCA, individual wholesale customers, and Bay Area water agencies were reviewed and addressed, as appropriate. Documentation of related communications and coordination efforts is on file with the SFPUC.

1.2 Public Participation

The SFPUC has always actively encouraged public participation in its urban water management planning efforts. For the 2005 UWMP update, the following measures were taken:

- A public hearing was held in November 2005 during an SFPUC Commission Meeting. A
 notice of the hearing was advertised as specified in California Government Code 6066.
 Additional noticing was done in local community papers in order to reach a more diverse local
 population. Public comment on the draft 2005 UWMP was taken at the public hearing, as well
 as for a period prior to and after the hearing.
- The draft 2005 UWMP was made available for review prior to the public hearing at the San Francisco Main Public Library and the main offices of the SFPUC. A copy was also posted on the SFPUC website (www.sfwater.org).
- In addition to notification of the general public (i.e., general City retail water users), other measures were taken to inform large SFPUC retail water customers, such as the San Francisco Jail, Lawrence Livermore Labs, Treasure Island, Hunters Point Shipyard and Groveland Community Services. These large retail customers received mailings regarding the SFPUC's intent to review the 2000 UWMP and to prepare an updated 2005 UWMP. They also received a copy of the draft 2005 UWMP and notification of the date and time of the public hearing on the draft document.

Documentation of these above-stated notifications is on file with the SFPUC.

Public participation was encouraged through outreach on the draft 2005 UWMP, as wells as through public involvement in the development of the following water supply planning documents that provide the basis for much of the information included in this 2005 UWMP: the 2005 Draft Recycled Water Master Plan for the City and County of San Francisco (RWMP); the 2005 North Westside Basin Groundwater Management Plan (GWMP); and the 2005 San Francisco Local Water Resources Study (SF LWRS). Preparation of each document included a series of public workshops which were advertised through various avenues, such as e-mail, web postings and noticing in electronic SFPUC newsletters and in community newsletters.

An additional avenue for public involvement in SFPUC's water supply planning work has been through the development and ongoing implementation of the SFPUC Water System Improvement Program (WSIP). The WSIP includes multiple program elements including improvements to transmission and storage facilities within the SFPUC RWS for purposes of improving seismic and water delivery reliability, and meeting water supply reliability goals for 2030.

1.3 Plan Adoption

The SFPUC prepared this 2005 UWMP update and presented it to the San Francisco Public Utilities Commission for adoption prior to the end of 2005. Refer to Appendix B for a copy of the SFPUC Resolution adoption this 2005 UWMP update.

The adopted 2005 UWMP will be submitted to the California Department of Water Resources within 30 days of SFPUC Commission approval. Also within 30 days of approval, the SFPUC will submit a copy to the California State Library and to any city or county within which it provides water. Also during this period, the SFPUC will make the adopted 2005 UWMP available for public review during normal business hours. The SFPUC will implement this adopted 2005 UWMP, in accordance with the California Urban Water Management Act. \(^1\)

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California Water Code Division 6, Part 2.6, Sections 10610 through 10657. Refer to Appendix A for a copy.

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Section 2: Supplier Service Area

This section provides a description of San Francisco's service area, climate and demographic features.

2.1 Service Area

The SFPUC provides water to both retail and wholesale water customers. A population of over 2.4 million people within the counties of San Francisco, San Mateo, Santa Clara, Alameda and Tuolumne rely entirely or in part on the water supplied by the SFPUC.

The SFPUC's retail water customers include the residents, business and industries located within the corporate boundaries of the City and County of San Francisco (City). In addition to these customers, retail water service is also provided to other customers located outside of the City, such as Treasure Island, the Town of Sunol, San Francisco International Airport, Lawrence Livermore Laboratory. Castlewood and Groveland Community Services District.²

The SFPUC sells water to wholesale customers under terms of the Settlement Agreement and Master Water Sales Contract (Master Contract) together with individual water supply contracts. Since 1970, the SFPUC has supplied approximately 65 percent of the total wholesale customer water demand. Some of the wholesale water customers are entirely reliant on the SFPUC for their water supply. Table 1 lists the SFPUC's 27 current wholesale water customers.

Table 1 - SFPUC Wholesale Water Customer	Table	1 - SEPU	IC Wholesale	Water Cu	stomer
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Alameda County

- Alameda County Water District

Santa Clara County

- City of Milpitas
- City of Mountain View
- City of Palo Alto
- City of San Jose

San Mateo County

- City of Brisbane Water Department
 - City of Burlingame
 - City of Daly City
 - Town of Hillsborough
 - City of Menlo Park
 - City of Millbrae
 - City of Redwood City
 - Mid-Peninsula Water District
- ------
- California Water Service Company

- City of Hayward
- City of Santa Clara
- City of Sunnyvale
- Purissima Hills County Water District
- Stanford University
- Coastside County Water District
- East Palo Alto County Water District
- Estero Municipal Improvement District
- Guadalupe Valley Municipal
- North Coast County Water District
- City of San Bruno
- Skyline County Water District
- Westborough County Water District
- 1 California Water Service Company includes the districts of Bear Gulch, Mid-Peninsula and South San Francisco.

² Although these customers are located outside of the corporate boundaries of the City and County of San Francisco, for the purposes of water billing and accounting they are considered as part of SFPUC retail, as shown on Table 8.

Climate 22

San Francisco has a Mediterranean climate. Summers are cool and winters are mild with infrequent rainfall. Temperatures in the San Francisco area average 58 degrees Fahrenheit annually ranging from the mid-40s in winter to the mid-70s in late summer. Strong onshore flow of wind in summer keeps the air cool generating fog through September. The warmest temperatures generally occur in September and October. Rainfall in the San Francisco area averages about 20 inches³ per year and is generally confined to the "wet" season from late October to early May. Except for occasional light drizzles from thick marine stratus clouds, summers are nearly completely dry.

The wholesale customers experience a climate similar to San Francisco, except for customers located in the southern and inland regions that tend to experience warmer temperatures in the summer months with less incidence of fog.

23 Retail Customer Demographic and Economic Trends

The retail water demand projections presented in this report are partially related to population and business trends forecast by the Association of Bay Area Governments (ABAG) and Citywide Planning (City Planning). ABAG's and City Planning's projections are used in combination with an analysis of the characteristics of water use in the San Francisco retail service area.

The ABAG report titled Projections 2002. Forecasts for the San Francisco Bay Area to the Year 2025 summarizes demographic projections for the City at 5-year intervals. ABAG projections are then reviewed and refined by City Planning using up-to-date planning information for the City. City Planning accepted the industry data provided by ABAG in their 2002 projections but revised the population and household population projections based on projected future development.

The following provides demographic estimates and projections for the SFPUC's retail sector. This information is used as the basis for a detailed analysis of the SFPUC's retail water demand projections provided later in this document. A brief discussion of population estimates and projections for the SFPUC's wholesale customers is also included.

Population: The current population of San Francisco is estimated to be 798,000 (2005). The population of San Francisco is projected to increase to 871,000 by the year 2030. This increase amounts to an annual growth rate of approximately 0.35 percent for the next 25 years. A summary of population trends for the 1990 through 2030 historical and forecast period is shown in Table 2

Households, Household Population, and Household Size: San Francisco projects water use within its residential sectors using factors such as household population4, households (occupied dwelling units) and household size (the household population divided by the number of

Data from 1971-2000 from the two San Francisco monitoring stations (Mission Dolores/SF#047772 and Richmond/SF#047767). Source: www.wrcc.dri.edu.

All persons living in individual housing units, not including persons who reside in places such as nursing homes, military facilities or rooming houses.

households). These factors are important when projecting water use which is based on end-use of water within households.

A summary of household population and housing trends for the 1990 through 2030 historical and forecast period is shown in Table 2. The annual growth rate for households is about 0.4 percent for the next 25 years. The majority of new housing will be multi-family units.

Table 2 San Francisco County Demographic Trends										
Demographics	1990	2000	2005	2010	2015	2020	2025	2030		
Population	723,959	776,733	798,000	809,000 ¹	824,000 ¹	840,000 ¹	855,000 ¹	871,000 ¹		
Household Population	699,330 ²	756,976 ³	772,470 ⁴	787,965 ⁴	803,459 ⁴	818,954 ⁴	834,448 ³	849,942 ⁵		
Households	305,584 ²	329,703 ³	337,005 ⁴	344,306 ⁴	351,608 ⁴	358,909 ⁴	366,211 ³	373,513 ⁵		
Persons Per Household ²	2.29	2.30	2.31	2.30	2.29	2.27	2.28	2.28		
Single-family Units ⁶	105,521	108,255	109,985	111,410	111,725	111,745	111,765	111,785		
Multi-family Units ⁷	200,063	221,448	227,020	232,896	239,883	247,164	254,446	261,728		

Source: City and County of San Francisco Retail Demand and Conservation Potential Technical Memo (Hannaford, 2004).

Notes:

- Estimated by SFPUC based on guidance provided by Citywide Policy Analysis and Planning, San Francisco Planning Department.
- Association of Bay Area Governments. Projections 2002, Forecasts for the San Francisco Bay Area to the Year 2025, December 2001 (ABAG). Year 2030 based on Citywide Planning data.
- Citywide Policy Analysis and Planning, San Francisco Planning Department, Land Use Allocation 2002.
- Linearly interpolated from Citywide Planning estimates for 2000 and 2025.
- Linearly extrapolated from Citywide Planning estimates for 2000 and 2025.
- Historical value equals recorded number of single-family accounts. Projected values are estimated.
- Estimated based on the difference between Total Household Units and Single-family units (i.e., water accounts).

Industrial and Commercial Businesses: The current number employed in San Francisco is estimated to be 656,500 and projected to increase to 795,400 by the year 2030. This increase amounts to an annual growth rate of approximately 0.77 percent for the next 25 years. The historical and projected number of people employed in San Francisco has been developed by ABAG, and is shown in Table 3. The values have been delineated by job sectors as classified by Standard Industrial Classification (SIC) code.

The majority of the job growth between now and the year 2030 is anticipated in the services sector. The jobs include hotel services, health services and business services.

			Table 3							
		San Fra	ncisco	County						
Number of Jobs in Industrial and Commercial Businesses										
Job Sector Category	1990	2000	2005	2010	2015	2020	2025	2030 ¹		
Agriculture Services and Mining	700	700	700	700	700	700	700	700		
Construction	16,350	22,420	23,290	24,080	25,140	26,150	26,900	27,650		
Manufacturing	39,730	30,540	31,220	32,990	34,650	35,710	37,300	38,890		
Transportation and Public Utilities	40,290	41,690	43,320	44,790	46,750	48,650	50,020	51,390		
Wholesale Trade	30,560	23,450	23,970	25,340	26,610	27,430	28,640	29,850		
Retail Trade	80,120	94,450	97,730	102,620	106,800	110,730	114,260	117,790		
Finance, Insurance and Real Estate	75,400	74,480	77,380	80,010	83,520	86,900	89,360	91,820		
Services	229,470	281,510	291,150	309,870	322,550	333,270	345,100	356,930		
Government	64,900	65,190	67,720	70,020	73,090	76,060	78,220	80,380		
	_									

Source: City and County of San Francisco Retail Demand and Conservation Potential Technical Memo (Hannaford, 2004).

Notes:

579,180 | 634,430 | 656,480 | 690,420 | 719,810 | 745,600 | 770,500 |

795,400

2.4 Wholesale Population Estimates and Projections

Table 4 provides estimates and projections of population for the wholesale customer service area. As the table indicates, the population for the wholesale customers is expected to increase over the next thirty years.

Table 4										
Wholesale Population Estimates and Projections										
			Рорг	ulation Pro	jections					
	2001	2005	2010	2015	2020	2025	2030			
Wholesale Customer Service Area	1,623,560	1,688,216	1,741,087	1,792,558	1,840,995	1,887,342	1,933,829			

Source: SFPUC Wholesale Customer Demand Projections Study (URS, 2004).

Total

Linearly extrapolated from ABAG estimates for 2020 and 2025.

Section 3: Water Supply Sources

This section summarizes current and projected future SFPUC retail water supplies and describes the various sources of water supply available to meet the retail water demands of San Francisco. This section also summarizes the options used, or being considered, by the SFPUC to maximize resources and minimize the need to import water.

3.1 Current and Projected Water Supply Overview

Approximately 96 percent of San Francisco's demand is provided by the SFPUC RWS, which is made up of a combination of runoff into local Bay Area reservoirs and diversions from the Tuolumne River through the Hetch Hetch Water and Power Project (HHWP). The RWS supplies are distributed within San Francisco through SFPUC's in-City distribution system. A small portion of San Francisco's water demand is met through locally-produced groundwater and secondary-treated recycled water.

Table 5 provides a breakdown of current and projected water supply sources for meeting SFPUC retail water demand over the next 25 years. The SFPUC is analyzing the potential to develop additional local groundwater, recycled water and conservation. It has not been determined how these resources will be used to benefit either retail customers or the SFPUC RWS, and therefore these sources are not quantitatively applied in this 2005 UWMP to meet retail customer demand.

Table 5											
Current and Projected Retail Supplies (Non-drought Periods)											
Water Supply Source 2005 2010 2015 2020 2025 20											
Purchases from SFPUC Regional Water System	88.9 mgd	88.5 mgd	88.4 mgd	88.6 mgd	89.1 mgd	89.9 mgd					
Recycled water ¹	< 1 mgd										
Groundwater ²	3.5 mgd										

Notes:

- Less than 1 mgd of recycled water is currently used in the form of secondary-treated quality recycled water, produced at SFPUC's wastewater treatment plants. This recycled water is used primarily for dust control, consolidation of backfill, or other nonessential construction purposes, as well as sewer maintenance and box flushing, other wash down operations and wastewater treatment plant process water.
- Existing groundwater supplies from wells located in Golden Gate Park and in the San Francisco Zoo are used primarily for irrigation at Golden Gate Park, the Zoo and the Great Highway Median Irrigation (2.5 mgd). Approximately 1 mgd of groundwater is delivered to Castlewood from well fields in Pleasanton.

3.2 Description of Water Supply Sources

This section provides a description of the current water sources for SFPUC retail and wholesale customers.

3.2.1 SFPUC Regional Water System

The SFPUC RWS currently serves an average of approximately 265 million gallons per day (mgd) to 2.4 million users in the Bay Tuolumne, Alameda, Santa Clara, San Mateo and San Francisco counties. The SFPUC RWS is a complex system, shown in Figure 1, and supplies water from two primary sources:

- . Tuolumne River through the Hetch Hetchy Reservoir; and
- · Local runoff into reservoirs in Bay Area reservoirs in the Alameda and Peninsula watersheds.

Water developed by Hetch Hetchy Reservoir through the Hetch Hetchy Water and Power (HHWP) Project represents the majority of the water supply available to San Francisco. On average, the HHWP Project provides over 85 percent of the water delivered by the SFPUC. During drought, the water received from the HHWP Project can amount to over 93 percent of the total water delivered.

Bay Area reservoirs provide on average approximately 15 percent of the water delivered by the SFPUC RWS. The local watershed facilities are operated to conserve local runoff for delivery. The water demands that are not met with local supplies are met with supplies diverted from the Tuolumne River through the HHWP Project to the Bay Area.

The amount of water available to the SFPUC's retail and wholesale customers is constrained by hydrology, physical facilities, and the institutional parameters that allocate the water supply of the Tuolumne River. Due to these constraints, the SFPUC is very dependent on reservoir storage to firm-up its water supplies. More importantly, reservoir storage provides the SFPUC RWS with year-to-year water supply carry-over capability. During dry years the SFPUC has a very small share of Tuolumne River runoff available and the local Bay Area watersheds produce very little water. Reservoir storage is critical to the SFPUC during drought cycles since it enables the SFPUC to carry-over water supply from wet years to dry years.

The SFPUC RWS is geographically delineated between the HHWP Project facilities and the Bay Area water system facilities. The HHWP Project is generally comprised of the reservoirs, hydroelectric generation and transmission facilities, and water transmission facilities from Hetch Hetchy Valley west to the Alameda East Portal at Sunol Valley. The local Bay Area water system is generally comprised of the facilities from Sunol Valley west and includes the Alameda and Peninsula watershed reservoirs and the distribution system that delivers water to the SPPUC retail and wholesale customers.

On the San Francisco Peninsula, the SFPUC utilizes Crystal Springs Reservoir, San Andreas Reservoir and Pilarcitos Reservoirs located in San Mateo County to capture local watershed runoff. In the Alameda Creek watershed (Alameda County), the SFPUC has constructed the Calaveras Reservoir and San Antonio Reservoir. In addition to using these facilities to capture runoff, San Andreas, San Antonio and Crystal Springs reservoirs also provide storage for HHWP Project diversions, and serve as an emergency water supply in the event of an interruption to HHWP Project diversions.

The SFPUC serves its retail and wholesale water demands with an integrated operation of local Bay Area water production and imported water from the HHWP Project. In practice, the local watershed facilities are operated to capture local runoff. The water demands that are not met with local runoff require the importation of water from the HHWP Project.

Local area water production is dependent on precipitation and the ability of the SFPUC to regulate watershed runoff. Based upon yearly runoff, the utilization of water from the Alameda and Peninsula watersheds has varied from negligible to approximately 104 mgd.

Historical Development of the HHWP Project: The SFPUC RWS evolved through the development of two separate water systems: the Spring Valley Water Company and HHWP Project. The Spring Valley Water Company was established in 1858, developing a spring and several creeks into a local water system. It expanded over the years with the construction of Pilarcitos, San Andreas and Upper and Lower Crystal Springs Dams on the Peninsula, and later with the development of the Pleasanton Well Field, the Sunol Filtration Galleries and the Calaveras Dam in Southern Alameda County.

Very early during San Francisco's development it was recognized that the local water resources would be inadequate to support a burgeoning metropolis and plans for importing water from the Sierra Nevada were born. In the late 1800s, the City decided to develop its own water supply system and culminated in the planning, financing and construction of the HHWP Project. Because many of the HHWP Project facilities were to be located within Yosemite National Park, Congressional approval of the project was required. That approval was granted by the Raker Act of 1913.

The construction of HHWP Project began in earnest in 1914, and after almost 20 years of construction, including building of the Hetch Hetchy Reservoir, and the acquisition of the Spring Valley Water Company by San Francisco, Sierra Nevada water began flowing into the local distribution system. Through the operation of the two systems, the SFPUC has been able to provide the residents of the City and its neighboring communities with an unfailing supply of high quality, potable water from protected sources.

Since the 1930s, the major additions to the SFPUC's water system have included the raising of O'Shaughnessy Dam and the development of Lake Lloyd; the construction of additional pipelines across the San Joaquin Valley; and the local construction of San Antonio Reservoir in Alameda County and the Bay Division Pipelines 2, 3 and 4. Other local projects included Crystal Springs Pipeline No. 3; Sunol Valley and San Andreas Filtration Plants; and the Crystal Springs Bypass Tunnel and Balancing Reservoir.

Figure 1: SFPUC Regional Water System



Improvements to the SFPUC RWS: The SFPUC is proceeding with the WSIP, which will deliver capital improvements to the existing system, enabling the SFPUC to meet level of service goals for seismic and delivery reliability, water supply and water quality. Further details on the WSIP are provided in the Reliability Planning section.

3.2.2 San Francisco Water System

San Francisco's Water System, the in-city distribution system, was developed during the onehundred year period between 1860 and 1960, reflecting the patterns and rates of growth in the City. San Francisco's retail water supply is delivered to the City in several major pipelines. One pipeline provides water to the eastside of the in-city distribution system and three pipelines serve the westside of the in-city distribution system.

As shown in Figure 2 below, San Francisco's Water System includes 14 reservoirs and 9 water tanks that store the water delivered by the HHWP Project and the local Bay Area water system. The 17 pump stations and approximately 1,250 miles of pipelines move water throughout the system and deliver water to homes and businesses in the City. Several major pipelines convey water from the Peninsula System to San Francisco, terminating at Sunset, University Mound, and Mercad Major Reservoirs.

Improvements to San Francisco's Water System are also included in the SFPUC's WSIP, such seismic improvements to many of the pump stations and upgrades to reservoirs.



Figure 2: San Francisco Water System Facilities

3.3 Local Water Supply Sources

A small portion of SFPUC's retail water customer supply is provided by groundwater and recycled water, as described below

3.3.1 Local Groundwater

San Francisco overlies all or part of seven groundwater basins. These groundwater basins include the Westside, Lobos, Manna, Downtown, Islais Valley, South and Visitation Valley basins. The Lobos, Manina, Downtown and South basins are located wholly within the City limits, while the remaining three extend south into San Mateo County. The portion of the Westside Basin aquifer located within San Francisco is referred to as the North Westside Basin. With the exception of the Westside and Lobos basins, all of the basins are generally inadequate to supply a significant amount of groundwater for municipal supply due to low yield.

Early in its history, San Francisco made use of local groundwater, springs, and spring-fed surface water. By 1913, it was estimated that San Francisco was using approximately 8.5 mgd of groundwater from private and City wells, springs, and Lobos Creek, which is fed by groundwater springs. Prior to the completion of the Calaveras Reservoir on Alameda Creek, part of the San Francisco's water supply was also from Lake Merced, which was significantly spring fed at the time. Lake Merced was substantially lowered by diversions in the 1920's and early 1930's, the latter as a result of diverting from the lake for emergency water supply during drought conditions from 1929 to 1932'

In the 1930's, a well field was installed on the westside of San Francisco and groundwater was extracted for a short period of time, from late 1930 through mid-1935. Pumping rates were reported to be up to a total of 6 mgd. After completion of the Hetch Hetchy Reservoir and aqueduct in the 1930's, the municipal water supply system began to rely almost exclusively on surface water from local runoff, from the Alameda Creek watershed (into Calaveras Reservoir), and from the HHWP Project.

Local groundwater use, however, has continued in the City. About 2.5 mgd of groundwater is pumped from wells located in Golden Gate Park and the San Francisco Zoo. The groundwater is used in the Westside Groundwater Basin, mostly by the City's Recreation and Park Department, for irrigation in Golden Gate Park and at the Zoo. (About 1 mgd of groundwater is delivered to Castlewood from well fields operated by the SFPUC in Pleasanton. For the purposes of water accounting and billing, these deliveries to Castlewood are accounted for as part of the SFPUC retail customer base.)

3.3.2 Local Recycled Water

San Francisco's experience with recycled water dates back to the early 1900s when the Golden Gate Park Area was transformed from 1,070 acres of "great sand waste" to a garden spot through the application of raw sewage and groundwater. In 1932, the Recreation and Park Commission constructed the McQueen Treatment Plant to provide secondary treatment, using an activated sludge process. This plant produced recycled water that was used to irrigate Golden Gate Park, fill its lakes, brooks and spillways, and recharge groundwater. The McQueen Plant met State health requirements for the production of recycled water until new regulations were proposed in

1978. The advanced primary plant was shut down in 1981 when it could not meet new health standards for irrigation use.

Additional efforts to expand the use of available secondary-treated quality recycled water began in 1989, when San Francisco built a secondary effluent truck loading station at it's Southeast Water Pollution Control Plant to facilitate distribution of recycled water for soil compaction and dust control. In 1991, San Francisco passed Ordinance 175-91° which requires that water used for dust control, consolidation of backfill, or other nonessential construction purposes, must be either groundwater or recycled water.

Currently in San Francisco, secondary-treated recycled water from SFPUC's wastewater treatment plants is used on a limited basis as wastewater treatment process water, as well as for soil compaction and dust control and some wash-down operations and sewer maintenance. Current use of secondary-treated recycled water used for these purposes in San Francisco is less than 1 mod.

3.3.3 Local Water Conservation

The SFPUC retail water supply strategy includes water conservation as a method for meeting water demands. A portion of future water demands in San Francisco is expected to be met by continued advancements in San Francisco's water conservation program. The Demand Management section of the 2005 UWMP provides information on San Francisco's past and current conservation program.

3.4 Resource Maximization/Import Minimization Plan

In order to maximize resources and minimize the need to import water, the SFPUC has initiated various local water supply planning efforts that, in combination, represent the available options to the SFPUC. Each of these efforts, briefly described below, has informed the content of this 2005 UWMP and will be discussed in greater detail throughout this document.

Water Conservation: The SFPUC has been implementing water conservation programs for its retails customers for over 20 years. These programs have historically focused on residential fixture replacement and more recent programs have offered low-flow spray valves and more efficient equipment to commercial customers. In 2004, the SFPUC completed the City and County of San Francisco Retail Water Demands And Conservation Potential Technical Memo. In this study, forty-eight conservation measures were identified, quantified for water savings and cost and feasibility of implementation. The most aggressive package of conservation measures identified for implementation in San Francisco, given current technology and available information, was estimated to cumulatively save about 4.5 mod⁶ by 2030.

Recycled Water: The SFPUC has prepared a 2005 Draft Recycled Water Master Plan for the City and County of San Francisco (2005 Draft RWMP) that explores the potential role that recycled water could play in San Francisco in order to reduce use of potable water for uses such

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San Francisco Public Works Code, Article 21, Sections 1100-1107

⁶ Note that these savings would be in addition to passive water conservation savings of about 10.3 mgd that are expected to be generated by 2030 by the natural replacement of plumbing fixtures as required by the current plumbing odd.

as irrigation. The Draft RWMP, released for public review in October 2005, identifies potential Phase 1 recycled water projects for San Francisco that could produce approximately 4.1 - 4.5 mgd.

Groundwater: Currently within the City, approximately 2.5 mgd of groundwater is pumped and used to irrigate in areas such as Golden Gate Park, the San Francisco Zoo and the Great Highway Median. In May 2005, the SFPUC released the North Westside Basin Groundwater Management Plan (GWMP). This 2005 GWMP identifies several new local groundwater projects that could be developed to produce an additional 2.0 mgd of groundwater for potable purposes.

San Francisco's Local Water Resources Study (SF LWRS): In order to assess the potential of local water supply sources within the City in an integrated manner, the SFPUC initiated the San Francisco Local Water Resources Study (SF LWRS). This study brought together planning data from existing planning projects, such as the 2005 GWMP and the 2005 Draft RWMP, and summarizes the potential of local supplies and presents various implementation scenarios.

Section 4: Water Quality

As shown previously in Table 5, the SFPUC's retail demand is primarily met with water from the RWS, with a small portion (approximately 3 to 4 percent) from local groundwater supplies and recycled water. Each of these sources delivers high-quality water relative to its intended use; supplies from the RWS are extremely high-quality and are used for both potable and non-potable uses, and existing groundwater and recycled water supplies are currently used for non-potable uses.

It has been assumed in this 2005 UWMP that these existing supplies will be available in the future. The SFPUC does not anticipate that, in the future, water quality issues will alter the SFPUC's current water management strategies or supply reliability. This section provides information on the water quality of the SFPUC existing retail water supplies.

4.1 Quality of Regional Water System Supplies

The SFPUC RWS delivers high-quality water. The current supplies available to the RWS include the Tuolumne River and supplies from local Bay Area reservoirs. The majority of the water supply originates in the upper Tuolumne River Watershed high in the Sierra Nevada, remote from human development and pollution. This pristine water, referred to as Hetch Hetchy water, is protected in pipes and tunnels as it is conveyed to the Bay Area, requiring only primary disinfection and pH adiustment to control corrosion in the pipelines.

The U.S. Environmental Protection Agency and the California Department of Health Services have approved the use of this drinking water source without requiring filtration at a treatment plant. However, local water from the Alameda and Peninsula Watersheds requires filtration to meet drinking water quality requirements. The filtered and treated water from the local watersheds is blended with Hetch Hetchy water, and most customers receive water from a blended source. System water quality, including both raw water and treated water, is continuously monitored and tested to assure that water delivered to customers meets or exceeds federal and state drinking water/oublic health requirements.

As the purchases from the SFPUC RWS increase over time, the SFPUC will rely on the Tuolumne River and supplies from local reservoirs to meet the increased demand in most years, plus the additional water sources identified in the SFPUC WSIP during dry years. These dry-year supplies are summarized in Table 6 (refer to Section 5). The SFPUC will continue to rely on their high-quality water resources. It is anticipated that there will be no degradation of water quality in the fitture

4.2 Quality of Groundwater Supplies

Based on semi-annual monitoring, the groundwater currently used for irrigation and other non-potable uses in San Francisco meets, or exceeds, the quality needs for these end uses.

Plans for development of additional groundwater in San Francisco include plans for potable supply in the North Westside Groundwater Basin. As part of this effort, the groundwater quality at new proposed well sites is being sampled for all drinking water parameters. Based on preliminary information collected to date, water quality appears to meet drinking water standards at the new proposed well sites. However, two existing irrigation wells that have detected nitrate and iron at

levels above drinking water standards. These elevated levels may be the result of a shallow sanitary seal or other historic land uses at these specific sites.

4.3 Quality of Recycled Water Supplies

Recycled water in San Francisco is currently being used on a limited basis as wastewater treatment process water, as well as for soil compaction and dust control and some wash-down operations and sewer maintenance. This recycled water undergoes secondary-treatment at the SFPUC's wastewater treatment facilities and meets the CA Title 22 Code of Regulation requirements for recycled water use for these non-potable uses.

Development of additional recycled water supplies in San Francisco is being addressed in the 2005 Draft RWMP, which has identified four proposed Phase 1 projects. Three of the four proposed Phase 1 projects call for disinfected tertiary level recycled water. The remaining project calls for "advanced" tertiary treatment, including micro filtration and reverse osmosis in order to remove nutrients, for use in or around Lake Merced in order to prevent eutrophication of the lake.

Section 5: Reliability Planning

This section addresses the reliability of both the SFPUC RWS and the reliability of deliveries to San Francisco's retail customers. As previously described, the retail customer's water supply comes from the SFPUC RWS and local water supply sources (groundwater and recycled water). Retail customers receive about 96 percent of their water supply from the SFPUC RWS. The SFPUC RWS also meets the water needs of the SFPUC wholesale customers who collectively receive about 68% of their water supply from the SFPUC RWS.

5.1 SFPUC RWS Reliability

The SFPUC's water supply system reliability is expressed in terms of the system's ability to deliver water during droughts. Reliability is defined by the amount and frequency of water delivery reductions (deficiencies) required to balance customer demands with available supplies in droughts. The SFPUC plans its water deliveries anticipating that a drought worse than the worst drought yet experienced may occur. This section discusses both system-wide deficiencies and anticipated retail deficiencies that the City may experience.

The SFPUC's RWS supply has experienced periodic, short-term outages as a result of water quality events. Due to the fact that Hetch Hetchy water is not filtered, it is subject to strict water quality standards set by the state Department of Health Services. As a result of weather events, turbidity levels can exceed standards requiring the Hetch Hetchy supply to be diverted to local storage, in the case of short-term events, or shut off, in the case of longer-term events, until levels drop to within standards. During these periods, the SFPUC's entire supply comes from the Sunol Valley Water Treatment Plant and the Harry Tracy Water Treatment Plant, both of which are supplied by local Bay Area reservoirs.

Estimating Frequency and Magnitude of SFPUC RWS Supply Deficiencies

The total amount of water the SFPUC has available to deliver to retail and wholesale customers during a defined period of time is dependent on several factors. These include the amount of water that is available to SFPUC from natural runoff, the amount of water in reservoir storage, and the amount of that water that must be released from the SFPUC's system for commitments to purposes other than customer deliveries (e.g., releases below Hetch Hetchy reservoirs to meet Raker Act and fishery purposes).

The 1987-92 drought profoundly highlighted the shortfall between the SFPUC's water supplies and its demands. Other than during the drought of 1976-77, drought sequences in the past did not seriously affect the ability of SFPUC RWS to sustain full deliveries to its retail and wholesale customers. Based on the 1987-92-drought experience, the SFPUC assumes its "firm" capability to be the amount the system can be expected to deliver during historically experienced drought periods. In estimating this firm capability, the SFPUC assumes the potential recurrence of a drought such as occurred during 1987-92, plus an additional period of limited water availability. This drought sequence is referred to as the "design drought" and serves as the basis for planning and modeling of future drought scenarios.

SFPUC Design Drought

The SFPUC Design Drought, used for planning and modeling of future drought scenarios, is based on historic droughts and hydrology. As detailed below, it is a drought sequence that is more severe than what the SFPUC RWS has historically experienced.

The 1987-92 drought defines the most extreme recorded drought for SFPUC water deliveries, and this establishes the basis for the Design Drought sequence. The drought covered a 6½ year period, July 1986 (point in time SFPUC reservoirs were full) to about November/December 1992 (point in time SFPUC reservoirs reached minimum storage). Though the SFPUC reservoir system began to recover with precipitation during the last 6 months of the drought, July 1992 through December 1992. SFPUC customer purchases exceeded SFPUC inflow and the SFPUC system storage continued to decline through November/December 1992. Because the last 6 months of the 1987-92 drought includes the beginning of this recovery period, it has been removed from the SFPUC's Design Drought.

In summary, the SFPUC's Design Drought sequence totals an 8½ year period and is based on the following factors:

- Historical Hydrology: The 6 years of hydrology from the historical drought (July 1986 June 1992):
- Prospective Drought: A 2½ year period which includes the 1976-1977 drought (to represent a drought sequence worse than historical); and
 - The last 6 months of the Prospective Drought is the beginning of the system recovery period. The precipitation begins in the fall, and by about the month of December the SFPUC reservoir inflow exceeds customer demands and SFPUC system storage begins to recover.

Current Estimates of SFPUC RWS Supply Deficiencies

At current delivery levels, the SFPUC RWS can be expected to experience up to a 25 percent shortage 15 to 20 percent of the time, during multiple-year drought sequences. Therefore, the SFPUC is faced with the necessity to develop a long-term strategy to accommodate or rectify the potential of future water shortages throughout its wholesale and retail operations.

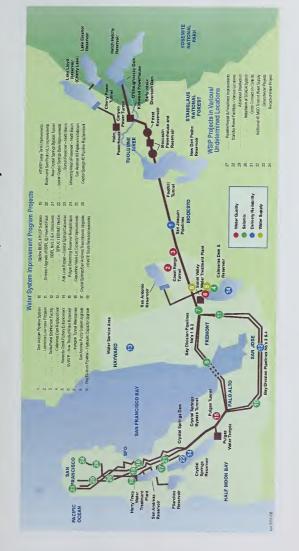
5.2 SFPUC RWS Plans to Assure a Reliable Water Supply

As an established major water supplier for the Bay Area region, the SFPUC has a responsibility to secure and manage its existing system supplies and plan for future needs, as well as securing its own retail supply. Given the existing circumstance that the SFPUC's water supplies are less than current system demands during dry-years and that demand growth is anticipated, the SFPUC and its customers must accept the challenge of an increasing gap between supplies and demands.

5.2.1 SFPUC Water System Improvement Program

In order to enhance the ability of the SFPUC water supply system to meet identified service goals for water quality, seismic reliability, delivery reliability, and water supply, the SFPUC is undertaking the WSIP. The WSIP will implement capital improvements aimed at enhancing the SFPUC's ability to meet its water service mission of providing high quality water to its customers in a reliable, affordable and environmentally sustainable manner. Figure 3 on the following page lists the WSIP projects and their location.

Figure 3: SFPUC Water System Improvement Projects



Aspects of the WSIP are rooted in the 2000 "Water Supply Master Plan" (WSMP) and various water system vulnerability assessments. Planning efforts for the WSIP gained momentum in 2002 with the passage of San Francisco ballot measures Propositions A and E, which approved the financing for the water system improvements. Also in 2002, Governor Davis approved Assembly Bill No. 1823, the Wholesale Regional Water System Security and Reliability Act which, among other things, requires the SFPUC to complete certain WSIP projects within a specified timeframe. The WSIP is expected to be completed in 2016.

A Programmatic Environmental Impact Report (PEIR) is being prepared under the California Environmental Quality Act (CEQA). Projects included in the WSIP will undergo individual project specific environmental review as required. Under CEQA, project specific environmental review would result in preparation of a Categorical Exemption, Negative Declaration or Environmental Impact Report. Each project will also be reviewed for compilance with the National Environmental Policy Act and local, state and federal permitting requirements as necessary.

The water supply source options being investigated as part of the WSIP and assumed to be available to the SFPUC RWS in this 2005 UWMP are:

- 1. SFPUC RWS Conjunctive Use Program: South Westside Groundwater Basin
- 2. SFPUC RWS Water Transfers: Tuolumne River
- 3. SFPUC RWS Recovery of Storage: Restoration of Calaveras and Crystal Springs reservoirs

The following subsections describe these three SFPUC RWS source options.

The WSIP is also investigating the potential of developing local water resources such as water recycling, groundwater, desalination and conservation to produce water to meet SFPUC customer's purchase requests. These options are still under development and are not discussed below in this section. However, in Section 5.3, as part of the Local Water System Reliability description, these resources as discussed as potential opportunities in San Francisco to meet retail customer demands.

5.2.2 SFPUC RWS Conjunctive Use Program

To the south of San Francisco, the South Westside Groundwater Basin in San Mateo County also has the potential to be utilized as part of a regional conjunctive use program. Under the program, SFPUC surface water would be used "in-lieu," or instead of pumping groundwater, in normal and wet years. Reducing such pumping would allow normal surface water recharge to increase the volume of groundwater in storage. This would effectively increase the amount of groundwater in storage available during dry years or an extended drought. Historic groundwater use within the basin has lowered the groundwater levels in the basin by up to 200 feet below sea level, one goal is to improve overall storage in the basin such that the net draw down during droughts would cause water levels to decline below these historic low levels. Also, it should be noted that Tuolumne River water will not be used to "recharge" the aquifer but rather will be substituted in place of pumped groundwater, which will rise slowly over time as a result of not being pumped.

Since the late 1990's the cities of Daly City, San Bruno and the California Water Service Company (CWSC), which serves the City of South San Francisco, have worked cooperatively on several groundwater management activities with the long-term goal of preserving groundwater quality and improving water supply reliability. Projects have included ongoing semi-annual groundwater monitoring, installation of coastal saltwater intrusion monitoring wells, installation of an interior

multi-level monitoring well, regional geologic analysis, and implementation of a pilot conjunctive use program.

Conjunctive Use Pilot Project: A pilot supplemental water program was initiated in late 2002 with the CWSC and the Cities of San Bruno and Daly City. The supplemental delivery allowed the parties to study the effects of a conjunctive use pilot program whereby CWSC, San Bruno and Daly City reduced groundwater pumping and purchased supplemental surface water from the SFPUC. Results from the study allowed the SFPUC and its groundwater consultants to investigate the effects of groundwater pumping on groundwater basing water levels. The findings of the study indicate that conjunctive use is feasible in the study area and that for planning purposes approximately 75,000 AF of potential storage is available.

Full Scale Conjunctive Use Agreements: In December 2004, the SFPUC and City of Daly City approved the terms of a conjunctive use program for a portion of the Westside Groundwater Basin. Under this new program, the SFPUC will bank groundwater for later use when surface water supplies are reduced due to a drought or emergency. The SFPUC is currently working to establish similar agreements with CWSC and San Bruno.

Full Scale Program Concept: The program is being designed to provide about 8,100 acre-feet per dry-year (up to 61,800 acre-feet over about 7.5 years). In normal and wet years SFPUC surface water would be used "in-lieu," or instead, of pumping groundwater. Reducing such pumping would increase the volume of groundwater in storage available during dry years or an extended drought. For example it is assumed that customers such as Daly City, CWSC and San Bruno will receive an additional combined 7 mgd (an additional 7 mgd delivery above their purchase request) during non-dry years to offset their groundwater pumping. This "banked" water will be provided to these same customers during dry years (pumped from the groundwater), reducing their purchase request from the SFPUC by about 7 mgd in dry years.

Implementation Plan: Funds for construction of facilities to support the South Westside Groundwater Basin Conjunctive Use Program are allocated in the SFPUC's WSIP. Construction includes up to ten new groundwater production wells to allow for increased groundwater production during a drought or an emergency. Well pump stations, disinfection units, and piping are assumed. This project also supports the development of a groundwater basin computer model. The current schedule indicates design and environmental review will be complete in 2010 and construction will be complete in 2010.

In this Plan, it has been assumed that this resource will be available to the SFPUC RWS as follows:

- Year 2005: 0 AFY during dry years
- Year 2010: 4,500 AFY during dry years
 (Maximum draw-down over a 7.5 year period is assumed to be about 33.800 acre-feet)
- Year 2015: 7,000 AFY during dry years
 (Maximum draw-down over a 7.5 year period is assumed to be about 52,500 acre-feet)
- Years 2020-2030: 8,100 AFY during dry years
 (Maximum draw-down over a 7.5 year period is assumed to be about 61,800 acre-feet)

For the 2005 UWMP, it has been assumed that local and Tuolumne River resources, in excess of

the SFPUC purchase requests, will be used to fill this groundwater basin in wet/normal years.

5.2.3 SFPUC RWS Water Transfer or Exchange Possibilities

The WSMP provides a discussion of the opportunities for the SFPUC to purchase water to benefit its wholesale and retail customer's water supply reliability. The discussion includes purchasing additional Tuolumne River water as well as water from willing sellers located geographically south of the Delta who possess water rights or contractual entitlements to water diverted from the Delta. In addition, the WSMP identifies potential opportunities of water purchases from willing sellers upstream of the Delta along the Sacramento, Feather, Yuba, American, San Joaquin Rivers and their tributaries.

In November 2001, the SFPUC issued a request-for-proposal to provide the SFPUC with up to 50,000 acre-feet of water per year for use as dry-year supplies. Under the RFP, the purchases/exchanges would need to be secured for a minimum of 5 years to meet water supply shortfalls out to year 2030. The RFP was sent out to water districts throughout the state of California, including irrigation districts, state agencies, federal agencies, wholesale urban water providers, and third party water marketers. In April 2002, the SFPUC received a sole response from Semitropic Water Storage District (Semitropic), located near Bakersfield, California.

The storage proposal requires the SFPUC to supply water to Semitropic for storage in Semitropic's groundwater basin. Under the proposal the SFPUC could use non-dry year supply from the Tuolumne River or find another source of non-dry-year supply that could be transported to the Semitropic groundwater basin. Semitropic would store the delivered water in the Semitropic groundwater basin by in-lieu means. Semitropic would credit the SFPUC account with the stored water, less the actual losses currently estimated to be ten percent. When called on by the SFPUC, Semitropic would exchange State Water Project (SWP) water for the stored SFPUC water. Semitropic would return the stored water to the California Aqueduct via a proposed New Unit of the Semitropic Groundwater bank. The SFPUC would take delivery from the SWP South bay Aqueduct turnout at San Antonio Reservoir or other locations. Other SWP contractors located south of Semitropic would actually use the water delivered by Semitropic.

After thorough evaluation and consideration, the SFPUC declined the proposal due to institutional issues related to water rights. The SFPUC also investigated the potential to participate in Semitropic through some of its wholesale customers that are current Semitropic banking partners. These options were also determined to be operationally infeasible.

Though an agreement is not in place today, the SFPUC has assumed in the 2005 UWMP that transfer agreements with other water right holder(s) on the Tuolumne River would provide a dry-year supply to the SFPUC RWS. These options may or may not require new or modified facilities to implement. The purchase will be utilized during dry years and will be available to the SFPUC RWS as follows:

- Year 2005: 0 AFY
- Years 2010-2015: 23,200 AFY
- Years 2020-2030: 29.000 AFY

5.2.4 Recovery of Storage in the SFPUC RWS

The SFPUC plans to restore lost capacity of the Crystal Springs Reservoir System (Upper and Lower Crystal Springs Reservoirs). The recovered capacity at the Crystal Springs Reservoir System would restore storage capacity from 58,300 to 69,400 acre-feet, the historical maximum capacity. In the 2005 UWMP, it has been assumed that the recovered storage will be available to the SFPUC RWS by year 2010.

Due to seismic stability concerns regarding the Calaveras Dam, the California Division of Safety of Dams (DSOD) has restricted the amount of water stored in Calaveras Reservoir to a target maximum of 38,000 acre-feet, a reduction in storage capacity of approximately 60 percent. Under DSOD direction, the SFPUC has committed to an aggressive schedule to alleviate the seismic safety concerns, with construction of a replacement dam by year 2011. The replacement dam and reservoir will store 96,700 acre-feet of water, the historical maximum capacity. In this 2005 UWMP, it has been assumed that the recovered storage will be available to the SFPUC RWS by year 2015.

5.2.5 Bay Area Regional Efforts to Improve Water Supply Reliability

The following describes projects and efforts underway or completed that help the SFPUC RWS meet its water supply reliability needs. None of these projects are reflected in the SFPUC's current strategy for meeting water supply needs, but as these projects move through the planning stages they will continue to inform the SFPUC water supply strategy.

5.2.5a Regional Interties

Regional interties help increase the reliability of the SFPUC RWS by allowing for water exchanges during emergencies, water shortages or maintenance.

- Milpitas Intertie: The SFPUC and Santa Clara Valley Water District (SCWWD) constructed a
 40 mgd intertie between their two systems to exchange water during emergencies and
 planned maintenance. The intertie was recently used during maintenance of one of SCVWD's
 water treatment plants.
- EBMUD-Hayward- SFPUC Intertie: The SFPUC and East Bay Municipal Utility District (EBMUD) are constructing a 30 mgd intertie between the two systems in the City of Hayward. The intertie will be used to transfer water between EBMUD and SFPUC during emergencies and maintenance, when water may be available. This project is part of the WSIP and the expected completion date for this intertie is August 2006.
- South Bay Aqueduct Interties: The SFPUC also has one permanent and one temporary intertie to the South Bay Aqueduct (SBA), which would enable the SFPUC to receive State Water Project water.

5.2.5b Regional Desalination

The SFPUC is currently participating in the Bay Area Regional Desalination Project with SCVWD, EBMUD, and the Contra Costa Water District (CCWD), to jointly explore the development of regional desalination facilities that could benefit the 5.4 million Bay Area residents served by these agencies. The partnership has received state and federal funds for the investigation. The Bay Area Regional Desalination Project may consist of one or more desalination facilities that would remove salt from seawater or other brackish water sources, with an ultimate total combined capacity of up to 80 mgd. Desalination would provide a potential potable water supply for municipal and industrial use. The facilities would provide the following:

- A supplemental supply during drought periods:
- A supplemental long-term supply;
- · Additional source(s) of water during emergencies; and
- An alternative water supply that would allow major facilities to be taken out of service for an
 extended time for inspection, maintenance, or repairs.

In October 2003, a preliminary Pre-Feasibility Study of the Bay Area Regional Desalination Project identified three venues where a regional desalination facility of ocean water could be located. These sites include East Contra Costa County Pittsburg-Antioth area, Oakland near the foot of the Bay Bridge, and San Francisco near the Oceanside Water Pollution Control Plant. The likely water treatment process would be reverse osmosis, which removes salt using thin membranes. Salts are concentrated in a brine solution that must be treated or diluted and then returned to the ocean or Bay in compliance with regulations.

A more detailed Feasibility Study is being conducted and will be completed in 2006. This level of study is needed to provide more information on potential benefits, institutional arrangements, location and type of facilities, appropriate technologies, environmental impacts, and to estimate costs of the various options. Public outreach will also occur during this phase of the project. If the project continues forward, the pilot plant, environmental review process, design and construction will occur during the ensuing years. Implementation of the Bay Area Regional Desalination Project will require a lengthy public review process because of the number of agencies that would be involved with discretionary permit review and the as-yet unidentified concerns of the affected public. Desalination is not reasonably expected to occur before 2010.

5.2.5c Bay Area Water Quality and Supply Reliability Program

The SFPUC has also been an active participant in a CALFED funded program to identify potential Bay Area projects that can improve water supply reliability and water quality through Bay Area projects that can improve water supply reliability and water quality through Bay Area partnerships. The other participating agencies included Alameda County Water District (ACWD), BAWSCA, CCWD, EBMUD, SCWWD, and Zone 7 Water Agency. The program has just completed its second phase and it will be up to the individual partners to determine if they would like to proceed to a feasibility stage with any of the projects identified through the process. The program identified an enlarged Calaveras Reservoir as a potential surface storage project that could provide water supply reliability benefits to the SFPUC retail and wholesale customers, SCWWD and ACWD. Another project involving brackish water desalination in the East Bay near Newark was also identified as providing potential water supply reliability benefits to the SFPUC retail and wholesale customers and ACWD. None of these projects have advanced beyond the CALFED study.

5.2.5d Bay Area Integrated Regional Water Management Plan

The SFPUC is currently participating in a nine county Bay Area effort to develop an integrated regional water management plan that will cover water supply and water quality, wastewater and water recycling, storm water and flood protection, and habitat protection and ecosystem restoration objectives and efforts in the Bay Area. The Integrated Plan will also identify integrated and collaborative projects among Bay Area agencies.

5.3 Local Water System Reliability (SFPUC Retail Customers)

There are three ways to improve water reliability to the SFPUC retail customer:

- . Improve the reliability of the SFPUC RWS as discussed above in Section 5.2;
- · Increase local water supply projects within San Francisco; and
- Improve the reliability of San Francisco's local water distribution system.

Although SFPUC retail customers receive approximately 96 percent of their water supply from the SFPUC RWS, efforts to improve the reliability of the local water system are also a key component of the SFPUC's planning work. This section summarizes the most current information on the SFPUC's efforts to increase local water supply within San Francisco and to improve the reliability of the SFPUC's local water distribution system.

5.3.1 San Francisco Local Water Resources Study

In order to assess the potential of local water supply sources within the City in an integrated manner, the SFPUC initiated the San Francisco Local Water Resources Study (SF LWRS) in 2005. The study brought together planning data from existing planning projects, such as the North Westside Basin Groundwater Management Plan and the Draft Recycled Water Master Plan, and summarizes the potential of local supplies and presents different implementation scenarios.

The SF LWRS report, entitled Local Water Resources Study: Diversifying San Francisco's Water Supply Mix, will be released by the end of 2005 and will summarize the potential local water supply options for San Francisco (including recycled water, groundwater, conservation and desalination). The study also presents the implications of implementing different combinations of these local supply options, in terms of costs, ratepayer impacts and drought impact. The local water resources information in the remainder of this section is consistent with the summary information which will be provided in the final SF LWRS study report.

5.3.2 Local Groundwater Program

In April 2005 the SFPUC completed the Final Draft North Westside Basin Groundwater Management Plan (2005 Groundwater Plan). The 2005 Groundwater Plan was developed as part of the SFPUC's commitment to integrated water resources management for the following primary reasons:

- Provides a roadmap for managing and developing groundwater resources as an emergency, drought, and regular drinking water supply;
- Allows for community involvement related to new well locations and interrelated concerns about Lake Merced and Pine Lake;
- Forms the basis for supplemental environmental review of several new groundwater production wells not contained in a 1997 Environmental Impact Report; and
- Fulfills California Department of Water Resources recommendations that encourage development of local groundwater management plans and as a requirement for most DWR grant funding.

North Westside Groundwater Basin Overview: The North Westside Groundwater Basin underlies that portion of the Sunset District in San Francisco from Golden Gate Park to the San Francisco/San Mateo County line, and from the Pacific Ocean to inland bedrock exposures generally associated with Mount Sutro and Mount Davidson. The principal aquifers for water supply in the basin are the Colma and Merced Formations. Several thousand feet in total thickness, the Merced Formation has been developed for water supply in its upper and middle units which are on the order of 500 and 600 feet thick, respectively. The shallower Colma Formation is near the surface, and is not clearly distinguishable from the upper Merced Formation. Almost all groundwater development in the overall Westside Basin has been south of the North Westside Basin, in the northern part of San Mateo County, although there was some groundwater development in the Sunset District in the 1930s. In recent years, the substantial use of groundwater from the basin south of San Francisco has been for municipal supply in Daly City. South San Francisco and San Bruno [about 7,000 acre feet per year (afy)], and for golf course and cemetery irrigation (about 3,500 afy). Some of the latter irrigation pumping was reduced, beginning in 2004, when recycled water was made available as a substitute irrigation supply at three private golf courses near Lake Merced.

The most notable feature of the North Westside Groundwater Basin is the Lake Merced complex, a surface expression of the shallow aquifer system. Lake Merced is composed of four lakes: North Lake, East Lake, South Lake, and Impound Lake. Over the last century, Lake Merced has experienced notably significant fluctuations in its level as a result of diversions from the lake for water supply, use of the lake as a regulating reservoir as part of San Francisco's surface water system, and a combination of increased groundwater pumping and increased urbanization effects on the Lake's watershed and local groundwater recharge areas. To a substantial degree, depressed levels of Lake Merced in the last 20 years have been a driving force toward development of this Groundwater Management Plan for the North Westside Groundwater Basin, particularly as related to the objective of the Plan to preserve surface water resources such as Lake Merced.

The 2005 Groundwater Plan includes the installation of production wells in the Sunset District, coupled with a monitoring program to ensure that the installation and operation of those wells will not cause seawater intrusion, further declines in water levels at Lake Merced and Pine Lake, or other negative environmental effects.

2005 Groundwater Plan Summary: To accomplish the management objectives established for the basin, the 2005 Groundwater Plan incorporates 13 elements which can be generally grouped into four types: monitoring of surface and groundwater conditions; groundwater exploration and development activities for local water supply; analysis and reporting on groundwater conditions; and other related management actions. The elements of the 2005 Groundwater Plan include:

Plan Element 1: Monitoring of Groundwater Levels, Quality, Production, and Subsidence – expansion of the existing monitoring of groundwater levels, quality and production to provide the basic data on which to assess the condition of the groundwater basin and to assess the impacts of groundwater production on groundwater levels, groundwater quality, subsidence and on surface waters.

Plan Element 2: Monitoring and Management of Surface Water Resources – continued and possibly expanded monitoring of surface water levels and quality, most notably at Lake Merced, to further the understanding of their interaction with groundwater.

Plan Element 3: Determination of Basin Yield and Avoidance of Overdraft — determination of the yield of the basin on both a regular (average annual) and an intermittent (dry year or emergency) basis in order to accomplish one of the primary objectives for the basin: that it be operated within its yield and thus not be overdrafted, and that it be effectively sustained as an ongoing reliable water supply without depletion of groundwater storage or degradation of quality.

Plan Element 4: Development of Groundwater to Augment SFPUC Municipal Water Supplies — exploration and development of groundwater for regular and dry period/emergency water supply, including possible development of water supply well sites in Golden Gate Park, in the Sunset District, near Stem Grove (Pine Lake), and in the vicinity of Lake Merced; currently identified potential well sites are listed.

Plan Element 5: Initiation of Conjunctive Use Operations – future pursuit of a conjunctive use program in the basin as a complement or extension of the conjunctive use activities that have been initiated on a demonstration basis since late 2002 in the southern part of the basin, in Daly City, South San Francisco and San Bruno, subject to agreement with these entities. In non-drought years under this project, the SFPUC would provide water from the RWS to these customers to substitute groundwater currently used for municipal purposes, thereby allowing the groundwater basin to recharge naturally; in drought years, the groundwater would be available for use to supplement the regional system water. In this Plan, this program is identified under the SFPUC RWS water sources — refer to the section on, "SFPUC RWS Conjunctive Use Program."

Plan Element 6: Integration of Recycled Water – incorporation of recycled water as a component of non-potable water supply in the basin, initially for recently implemented golf course irrigation and subsequently for other non-potable uses, in order to reduce groundwater pumping for non-potable uses and thus provide increased groundwater availability for regular as well as dry-period/emergency water supply.

Plan Element 7: Development and Continuation of Local, State and Federal Agency Relationships – development and continuation of relationships with local, state and federal agencies, primarily to continue cooperative efforts in the overall basin toward integrated data collection, initiation of conjunctive use, and development of supplemental water for augmentation of Lake Merced.

Plan Element 8: Continuation of Public Education and Water Conservation Program – continuation of public education and water conservation programs, primarily to inform interested groups on technical and related details about surface and groundwater details, to solicit public input to lake management and conjunctive use planning, and to obtain community support for basin management actions.

Plan Element 9: Identification and Management of Recharge Areas and Wellhead Protection Areas Delineation of groundwater protection zones and identification and investigation of potential contaminating activities.

Plan Element 10: Identification of Well Construction, Abandonment and Destruction Policies – continued implementation of well construction, abandonment, and destruction policies, pursuant to the newly revised 2005 San Francisco Well Ordinance.

Plan Element 11: Identification and Mitigation of Soil and Groundwater Contamination – coordination with the San Francisco Department of Public Health and Regional Water Quality Control Board to address soil and groundwater contamination in groundwater protection zones.

Plan Element 12: Groundwater Management Reports – preparation of regular and ad-hoc reports to complement a number of technical reports that have been prepared over the last decade on groundwater in the Westside Basin and its interrelationship with Lake Merced.

Plan Element 13: Provisions to Update the Groundwater Management Plan – provisions to update the 2005 Groundwater Plan, a recognition that the currently drafted plan reflects the most updated understanding of the occurrence of groundwater in the basin, but that the plan's elements could result in knowledge that suggests a change in currently planned management actions. The updated plan is intended to be a flexible document which can be updated to modify its existing elements and/or incorporate new elements as appropriate in order to recognize and respond to future groundwater and surface water conditions.

Development of the 2005 Groundwater Plan included significant public outreach and involvement efforts and included staff presentations, public workshops, email noticing, newspaper advertisements, web posting, and noticing in SFPUC newsletters. In addition to these organizations, the SFPUC contacted numerous individual residents.

Additional Groundwater Management Activities: Of the potential groundwater management activities listed in Water Code Section 10753, those already being cooperatively investigated and implemented as part of less formal groundwater management by the various pumpers in the basin include:

- Implementation of a conjunctive use pilot program.⁷
- Design and construction of a recycled water facility in Daly City to provide water to replace groundwater pumping for non-potable, irrigation uses at three golf courses around Lake Merced.
- Monitoring of groundwater levels and quality, including detailed monitoring of aquifer conditions around Lake Merced.
- Analysis of basin yield to avoid overdraft while maintaining municipal water supply and
 potentially increasing emergency and dry year water supply.
- Analysis and reporting on basin conditions.
- Continuing technical investigation to assess potential seawater intrusion and potential pumping impacts on surface water resources.
- Installation of a network of dedicated coastal monitoring wells between Thornton Beach and Golden Gate Park.
- Construction of test wells in the Sunset District to assess the potential yield of that portion of the North Westside Basin and to provide a design basis for new Sunset production wells described in the 2005 Groundwater Plan.
- Development of a conceptual model of the surface water and groundwater system.
- Continued development of lake augmentation programs.
- Continuing work on the development of a numerical groundwater flow model of the Westside Basin.

⁷ This program is identified under the SFPUC RWS water sources. Refer to the section on, "SFPUC RWS Conjunctive Use Program."

Potential for Increased Local Groundwater Production: The 2005 Groundwater Plan identifies opportunities for increasing groundwater production within San Francisco. For planning our poses, it is estimated that within the City approximately 2.5 mgd⁸ of groundwater is being pumped for non-potable uses, and that about 2 mgd of additional groundwater can be developed for potable supply. Additionally, of the existing groundwater being used in the City, primarily for irrigation at Golden Gate Park, the Zoo and the Great Highway Median, it is expected that about 2 mgd of this pumping can ultimately be redirected towards potable uses if recycled water is developed to take the place of groundwater in meeting these irrigation needs.

The potential for new groundwater is currently estimated at approximately 2 mgd. If project planning and development were to begin in the near future, this groundwater source could be available by year 2010. At this point in time, however, because it has not yet been determined how these resources will be used to benefit either SFPUC retail customers or the SFPUC RWS, this source has not been quantitatively applied in this 2005 UWMP to meet retail customer demand.

5.3.3 Local Conservation

Conservation through demand management measures is being treated as a local resource to improve the reliability of the retail customers. In November 2004, the SFPUC released a study which examined the potential for water savings in the Chy through implementation of a variety of conservation measures. The study evaluated the costs and benefits of implementing 48 different conservation measures using an end-use model. The enc-use model analyzed the effects of a specific conservation measure for a particular use, such as tollets, on overall water demand.

The results of this study indicated that local conservations programs implemented through 2030 could cumulatively reduce retail purchases from the SFPUC RWS by 4.5 mgd in year 2030. A description of the program which would achieve these savings is included in Section 8 (Water Demand Management Measures). At this point in time, however, because it has not yet been determined how these resources will be used to benefit either retail customers or the SFPUC RWS, this source has not been quantitatively applied in this 2005 UWMP to meet retail customer demand.

5.3.4 Local Recycled Water

The SFPUC is in the process of updating the Recycled Water Master Plan for the City and County of San Francisco (RIVMP, July 1996). The 2005 Draft RIVMP forms the basis for developing new recycled water project alternatives and updates the plan for implementation of recycled water projects in the City. These projects will save imported surface water and local groundwater for appropriate beneficial use and provide increased reliability.

Many factors prompted the need to update the existing 1996 RWMP (the Commission did not approve the 1996 RWMP due to the cost). These factors include: 1) new potential major customers; 2) new recycled water demand estimates; 3) new treatment technology; and, 4) new methods being implemented such as installation of built-in dual plumbing facilities at locations throughout the City, in compliance with San Francisco's Recycled Water Use Ordinances 390-91 and 391-91.

An additional 1 mgg of groundwater is delivered by the SPFUC to Castiewood for potable uses.

⁶ City and County of San Francisco: Retail Water Demands and Conservation Potential Technical Memo, precared for

In 2002, San Francisco voters approved a \$1.6 billion revenue bond to fund renovations to the SFPUC's water delivery system. The WSIP was developed in 2003 to implement capital projects authorized under the bond measure and includes approximately \$180 million for recycled water projects.

Recycled water is currently being used within San Francisco on a limited basis. San Francisco uses secondary-treated recycled water for wastewater treatment process water, soil compaction and dust control, as well as some wash-down operations and sewer maintenance. In addition, the SFPUC partnered with the North San Mateo County Sanitation District to modify their wastewater plant to produce tertiary-treated wastewater. A portion of the tertiary-treated recycled water produced at the facility is used to irrigate three golf courses - one located in Daly City and two in the City and County of San Francisco.

The SFPUC is currently working with the North Coast Water District, one of its wholesale customers, and the City of Pacifica to implement recycled water in the City of Pacifica. A significant customer to this project would be the Sharp Park Golf Course, owned and operation by the City and County of San Francisco Recreation and Parks Department. This project would, therefore, reduce SFPUC retail demand as well as some wholesale water demand. The SFPUC has recently applied for Proposition 50 grants to construct the project.

The 2005 Draft RWMP for San Francisco proposes a Phase 1 project for recycled water which would produce around 4.1 – 4.5 mgd by year 2015. At this point in time, however, because it has not yet been determined how these resources will be used to benefit either SFPUC retail customers or the SFPUC RWS, this source has not been quantitatively applied in this 2005 UWMP to meet retail customer demand. Recycled water is discussed in further detail in Section 10 (Water Recycling).

5.3.5 Local Desalination

The SFPUC's investigations of desalination as a water supply source have focused primarily on the potential for regional facilities. As discussed previously, the SFPUC's is participating in the Bay Area Regional Desalination Project with the SCVWD, EBMUD, and CCWD to investigate the feasibility of constructing a regional desalination plant to serve the needs of the 5.4 million Bay Area residents served by these participating agencies.

However, in the SF LWRS, which will be completed in 2005, a local desalination facility is included as an option in one of the alternative implementation scenarios presented. At this point in time, however, consideration of desalination as a local supply option is still in the early stages of evaluation and will not be used as a source option in this 2005 LWMP to meet retail demand.

5.3.6 Local Projects of the WSIP

Improvements to San Francisco's water system are also included in the SFPUC's WSIP, such as seismic improvements and to many of the pump stations and upgrades to reservoirs. These improvements will also contribute to improving water reliability to SFPUC's retail customers.

5.4 Water Availability Comparison

The current supplies available to the SFPUC RWS include the Tuolumne River (through the HHWP Project) and supplies from local reservoirs. In addition, supplies for retail deliveries include groundwater and recycled water. This 2005 UWMP assumes that these existing supplies will continue to be available in the future.

As the purchases from the SFPUC RWS increase over time, the SFPUC will rely on the Tuolumme River and supplies from local reservoirs to meet the increased demand in most years, plus the additional water sources identified in the WSIP in dry years, in order to meet the reliability goal of 80 percent set by the Commission in January 2005. These dry-year supplies are summarized below in Table 6. This 2005 UWMP assumes that these resources will be available to the RWS in the volumes and timeframes indicated in Table 6.

Table 6 Water Supply Reliability Water Supply Options for Years 2010 through 2030								
Water Supply Option	2005	2010	2015	2020	2025	2030		
Crystal Springs Reservoir Storage Recovered to 22 bg	No	Yes	Yes	Yes	Yes	Yes		
Westside Basin Groundwater afa	0	4,500	7,000	8,100	8,100	8,100		
Calaveras Reservoir Storage Recovered to 31.5 bg	No	No	Yes	Yes	Yes	Yes		
Water Transfers afa	0	23,200	23,200	29,000	29,000	29,000		

Notes:

bg = Billion gallons

afa = Acre-feet annually

This reliability goal is discussed in more detail in Section 8.2 of this document.

5.4.1 Normal, Single Dry-year and Three-year Minimum Water Supply

Assuming a normal water condition occurs for the ensuing year, no deficiency in water deliveries would be anticipated. The SFPUC system water deliveries are anticipated to be approximately 267 mgd (approximately 299.000 acre-feet), all of which could be met through existing resources.

The SFPUC plans its water deliveries anticipating that a drought worse than the 1987 through 1992 drought may occur. As a result, the SFPUC system operations are designed for providing sufficient carry-over water in SFPUC reservoirs after six years of drought. This design would enable the SFPUC to continue delivering water, although at significantly reduced levels, during and after such a drought.

The SFPUC currently operates under a plan that anticipates three stages of response to water supply shortages, ranging from voluntary customer actions to enforced rationing; the third stage envisioned to occur only during a drought period worse than previously experienced. Assuming the availability of existing supplies and the WSIP supplies summarized previously in Table 6, at current demand levels the SFPUC system can expect shortages of at least 10 to 20 percent in the first 3 multiple dry water years¹¹ (as shown in Table 7).

The 1987-92 drought period includes one-year and three-year sequences that are among the worst hydrologic periods projected for the SFPUC system. If within the next year a single dry (critical) year occurs, the SFPUC system deliveries could be reduced by 10 percent as a precaution to continued drought. If within the next three years a critical thee-year sequence recurred, the SFPUC system deliveries could be reduced by 10 to 20 percent.

Table 7 illustrates the SFPUC system water availability for the next three years under differing assumptions of hydrologic conditions. The impact of drought on the retail customers is described in Section 7 (Supply and Demand Comparison Provisions), Table 13.

Table 7
SFPUC System Water Availability - Year 2005

[Unit of Measure: Acre-feet/Year]

Average/Normal Water Year		Multiple Dry Water Years				
	Single Dry Water Year	<u>Year 1</u> 2006	<u>Year 2</u> 2007	<u>Year 3</u> 2008		
299,000	269,000	269,000	239,000	239,000		
100% of Normal	90% of Normal	90% of Normal	80% of Normal	80 % of Normal		

¹¹ Note that if the drought were to continue for 7 years, there would be shortages of 25 percent in dry years.

Section 6: Water Use Provisions

This section primarily focuses on the projection of the SFPUC's retail water demands. These demands are based on the recent demographic information and a detailed analysis of the SFPUC's retail water use characteristics. A brief discussion is also included concerning the projection of the wholesale water demand that affects SFPUC's water system operation.

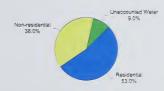
6.1 Retail Water Demands

Water use within San Francisco is currently less than the level of water use experienced in the 1960s and 1970s. Many factors have contributed to this reduction in water use, including significant changes to the mix of industrial and commercial businesses and their associated water demand, and the general characteristics of water use by San Francisco water customers. In particular, the droughts of 1976-77 and 1987-92, changes in plumbing codes, and conservation programs (either voluntarily embraced by residents and businesses or mandated by San Francisco), have apparently affected water demands.

Currently, total water use by SFPUC retail customers is approximately 90 million gallons per day (mgd)¹². Approximately 53 percent of this total is delivered to San Francisco residential customers. Non-residential water use accounts for approximately 38 percent of the demand with unaccounted water amounting to approximately 9 percent (Figure 4).

Both the total consumption and the per capita use of water have been on a general declined in San Francisco since the mid-1970s. Figure 5 shows the historical record of retail water deliveries by San Francisco for the 1965 through 2004 period in terms of both total deliveries and gross per capita consumption (gallons per capita-day, gpcd).

Figure 4
San Francisco Retail Water Demands



While the gross per capita consumption is not a true measure of the water used by an individual (since it includes water use by all categories of customers, e.g., industrial, commercial and losses), it does provide insight when comparing water use among regions. The current gross per capita consumption rate of water by San Francisco retail water customers is 112 gpcd, one of the

¹² Total water use of 90 mgd excludes 3.5 mgd of groundwater use.

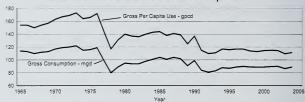
lowest in the state. 13

6.1.1 Retail Residential Water Use

Single-family units comprise approximately 33 percent of the total households in San Francisco. and use approximately 40 percent of the total water delivered to the residential sector. The remainder of residential water use (60 percent) occurs from multi-family units such as apartments.

Combined, the single-family and multi-family residential sectors have a current per capita consumption rate of 62 apcd. Due to the moderate climate and the high density housing in San Francisco, water use within the residential sector is used almost entirely indoors. For multi-family units, the average outdoor water use is considered negligible. For single-family residential units, the average, outdoor water use is less than ten percent of their total use.

Figure 5 Historical San Francisco Water Consumption



6.1.2 Retail Non-residential Water Use

Non-residential water use accounts for approximately 38 percent of San Francisco's retail water demands. This category of water use includes all sectors of water users not designated as residential, such as manufacturing, transportation, trade, finance, and government employment sectors, and the large services sector. Figure 4 illustrates the current distribution of jobs among the various employment categories within San Francisco.

Average employee-use rates, gallons per employee-day (GED), have been estimated for the various employment categories in the development of the end-use study. These values range from approximately 19 GED for the very small construction employment category to approximately 80 GED for the manufacturing employment category.

6.1.3 Methodology Used to Project Retail Water Demands

The SFPUC uses disaggregated end-use models to project its retail water demands. San Francisco's water demand is segregated into three distinct categories of water use: nonresidential (industrial, commercial and municipal uses); multi-family residential (multiple family dwellings such as townhouses and apartments); and single-family residential. The remainder of San Francisco's water demands such as unaccounted water and minor uses such as docks and shipping are forecast through trend analysis.

¹³ Excludes current groundwater use and use at Groveland Community Services District.

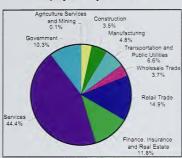


Figure 6 Employment by Job Sector

Non-residential water use is estimated using relationships between employment within San Francisco and employee-use of water. These coefficients are segregated by type of business or service enterprise, which is based on SIC code. The determination of appropriate employee-use rates within San Francisco's model came from extensive review of industry literature.

Two separate use models estimate multi-family and single-family residential water use. These models rely on a desegregation of household end-use of water, such as the number and volume of toilet flushes, duration of showering, and the size and frequency of use of washing machines and dishwashers. These data came from available residential end-use monitoring studies.

The models have been verified with water delivery records for historical periods, including periods of time when water demands were affected by drought induced rationing programs. Water use projections through the year 2030 were developed using these models. The water use projections incorporate the effects of water-saving plumbing code requirements, among other factors.

6.1.4 Projected Retail Demands

Projected water use for SFPUC's retail customers has been estimated using San Francisco's water use models. These models have incorporated economic and demographic forecast data, including projections of population, housing stock and employment.

Results of the water demand forecasts show that SFPUC's retail water demand will only slightly increase by the year 2030 (Table 8), even though the population in San Francisco is expected to increase by 15 percent for the same period (year 2005 through year 2030). The projected increase in retail water demands is due to estimated growth in business and industry activity, which will translate into a commensurate increase in water use. However, the expected increase in water use within these sectors is forecast to be partially counter balanced by decreases in water use within the residential sector.

The decreased water use forecast for both single-family and multi-family residential sectors is attributed primarily to the following factors:

- · Population density within housing units will decline in the future, and
- Market penetration of current plumbing codes within the residential sectors will increase as time progresses, resulting in an increase in current water savings due to the installation of more water-efficient fixtures.

In tandem, these two factors¹⁴ will lead to a lower water use by a slowly increasing population.

SERUC Project	Table 8 SFPUC Projected Water Demands (mgd)							
Entity Entity	Year 2000	Year 2005	Year 2010	Year 2015	Year 2020	Year 2025	Year 2030	
In-City Customers								
Single-family Residential 1	18.8 ²	18.4	17.8	17.3	16.8	16.4	16.2	
Multi-family Residential 1	28.8 ²	27.7	26.9	26.5	26.4	26.5	26.7	
Non-residential ¹	27.9 ²	29.2	30.2	31.0	31.7	32.6	33.5	
Other (B&C, D&S) 4	0.243	0.24	0.24	0.24	0.24	0.24	0.24	
Sub-total	75.7	75.5	75.1	75.0	75.2	75.7	76.5	
Unaccounted-for Water (losses)	8.3	<u>7.3</u>	<u>7.3</u>	<u>7.3</u>	<u>7.3</u>	7.3	<u>7.3</u>	
Total	84.0	82.8	82.4	82.3	82.5	83.0	83.8	
Other Retail Customers								
Other Retail Customers	4.9 ³	4.9	4.9	4.9	4.9	4.9	4.9	
Groveland Community Services District	0.43	0.4	0.4	0.4	0.4	0.4	0.4	
Lawrence Livermore Laboratory	0.8 ³	0.8	0.8	0.8	0.8	0.8	0.8	
Sub-total	6.1	6.1	6.1	6.1	6.1	6.1	6.1	
Retail Demand Met by SFPUC RWS	90.1	88.9	88.5	88.4	88.6	89.1	89.9	
Existing Groundwater								
Golden Gate Park, San Francisco Zoo and Great Highway Median Irrigation	2.5	2.5	2.5	2.5	2.5	2.5	2.5	
Castlewood	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
Sub-total Sub-total	3.5	3.5	3.5	3.5	3.5	3.5	3.5	
Total SFPUC Water System Retail Demand	93.6	92.4	92.0	91.9	92.1	92.6	93.4	

Notes:

¹ Includes the impact of water savings due to plumbing code changes.

² Current water use based on FY 1999-00 billing records.

³ Current water use based on FY 1996-97- FY 2000-01 billing records.

⁴ Builders & Contractors and Docks & Shipping.

¹⁴ A decrease in water use can also be expected, in both the residential and non-residential sectors, as a result of water conservation programs (such as those discussed in Section 8). Estimated water savings from such programs, however, were not included in projected water demand modeling, and therefore are not accounted for in Table 8).

6.2 Wholesale Water Demands

The SFPUC provides water to 27 entities that comprise the wholesale water customers. These entities receive almost two-thirds of the total water delivered by the SFPUC.

6.2.1 Methodology Used to Project Wholesale Water Demands

The SFPUC in coordination with the wholesale customers and BAWSCA conducted a comprehensive water demand forecast of its wholesale service area. Similar in methodology to the retail demand projection model, the Least Cost Decision Support System (DSS) model, an end-use model that disaggregates water account data to end-uses, was employed. End-use models allow one to portray the effects of the plumbing code on each account type over time as high water use fixtures are replaced with low water use fixtures. The DSS model disaggregates water use in an account by each water using fixture and incorporates the effects of plumbing and appliance codes on fixtures and appliances including toilets (1.6 gallons per flush), showerheads (2.5 gallons per minute) and washing machines (lower water use) on existing accounts. In projecting water demands for current users using the DSS model, the effects of the plumbing code are applied to the future water use of existing accounts. New water demands are determined by applying the growth rate in population and employment to the applicable water accounts.

6.2.2 Wholesale Water Demands

The total water demands of the wholesale water customers are shown in Table 9. The data shows that for the year 2030, water demands of the wholesale water customers (regardless of water source) will increase to approximately 324 mgd. Other water supplies available and developed by the wholesale customers show an increase of about 10 mgd. As shown in Table 9 the purchase of SFPUC water by the wholesale customers is projected to increase from approximately 178 mgd to 209 mgd by the year 2030.

Table 9 SFPUC Wholesale Customer Water Demands (mgd)						
	2005	2010	2015	2020	2025	2030
Wholesale Customer Purchase from the SFPUC RWS	177.9	188.9	191.6	197.5	203.6	209.4
Other Supplies	104.1	103.1	107.4	110.5	111.4	114.6
Total Wholesale Customer Demand	282.0	292.0	299.0	308.0	315.0	324.0

Source: SFPUC Wholesale Customer Water Demand Projections Study (URS. 2004)

6.2.3 Water Supplies Available to Wholesale Customers

The wholesale water customers rely on SFPUC and to some extent other supplemental sources of water supply to meet water demands. These additional sources include groundwater, local surface water, the Santa Clara Valley Water District and the State Water Project. In a few cases, reclaimed water is also an additional source of water supply. Although two-thirds of the wholesale water customers are entirely dependent on the SFPUC for water, the other one-third of the customers are able to obtain some portion of their water from other sources. Several entities are projecting an increased reliance on supplies other than the SFPUC to hold their SFPUC demands constant, or in some instances reduce their demands of SFPUC supplies.

6.2.4 Variability of Total Purchases from the SFPUC RWS

The water demands and supplemental sources of supply projected for the wholesale water customers are continually adjusting due to changing economic and demographic conditions within the retail and wholesale service areas

The supply projections made by the wholesale water customers may not always account for the variability in water supply hydrology associated with each source. They also may not incorporate all the potential impacts of recent or pending regulatory decisions such as the triennial review of the State Water Resources Control Board 1995 Water Quality Control Plan for the Bay-Delta estuary, which may significantly impact the availability of water from the State Water Project and the federal Central Valley Project. In addition to these factors, plans for increasing groundwater production, local surface water use, and reclaimed water use are at various stages of development and evaluation. Therefore, their projected supply benefits may be realized at different times and different yields than currently planned and/or projected. In the event any of these circumstances occur the wholesale customer water demands on the SFPUC could be higher than projected.

The historical delivery of water and the projected demand of water to the wholesale water customers from the SFPUC are shown in Figure 7. Figure 7 also depicts the demand for water by the wholesale water customers in combination with demands from all other SFPUC retail customers.

Total San Francisco Water Demands

Million Gallons Per Day

350
300
Historical Deliveries
Forecasted Demands

50
Wholesale Water Customers

100

50
SFPUC Retail Water Customers

1965 1970 1975 1980 1985 1990 1995 2000 2005 2010 2015 2020 2025 2030

Figure 7
Total San Francisco Water Demands

6.3 Impact of Past Drought on Water Demand and Conservation

The SFPUC and its wholesale customers experienced a prolonged drought from 1987 through 1992. During this time, the SFPUC met its retail customer needs through water purchases, conservation and voluntary rationing, and finally by mandatory rationing. Wholesale customers also reduced their demand through conservation and rationing. As a result of the drought-induced conservation programs, the SFPUC's retail and wholesale per capita water use has remained below pre-drought use, as reflected in Figure 7.

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Section 7: Supply and Demand Comparison Provisions

This section provides an assessment of the reliability of the SFPUC water supply during normal, dry and multiple dry years. The first section address supply and demand for the entire SFPUC RWS and the second section addresses supply and demand for SFPUC retail demand only.

7.1 Supply and Demand Comparison -- Regional Water System

Normal Years: Table 10 compares current and projected SFPUC RWS supply and demand. It indicates that during normal precipitation years, the SFPUC has adequate supplies to meet its projected retail and wholesale water demands.

Project	ted SFPUC Norma	RWS Supp	le 10 bly and Der on-drought		parison	
	2005	2010	2015	2020	2025	2030
SFPUC RWS Supply Totals ¹⁵	> 267 mgd	> 277 mgd	> 280 mgd	>286 mgd	>293 mgd	>300 mgd
SFPUC Demand Totals	267 mgd	277 mgd	280 mgd	286 mgd	293 mgd	300 mgd
Difference	0	0	0	0	0	0

As previously stated, projects as described in the WSIP will be required to meet demands during multiple dry years. The new water sources assumed to be available in this 2005 UWMP, with implementation dates, were previously summarized in Table 6.

Single Dry-Year: Given the additional supplies assumed to be available, Table 11 illustrates the level of first dry-year water delivery shortage that could occur with the projected 5-year increments of water demands.

Project	ed SFPUC	RWS Supp	le 11 bly and Der Dry-year	mand Com	parison				
	2005	2010	2015	2020	2025	2030			
SFPUC Demand Totals	267 mgd	277 mgd	280 mgd	286 mgd	292 mgd	300 mgd			
SFPUC RWS Supply	240 mgd	277 mgd	280 mgd	286 mgd	292 mgd	270 mgd			
Totals	90% of								
Difference	27	0	0	0	0	30 ¹			

Notes:

 The SFPUC is currently identify 10 mgd of groundwater, recycled water and conservation programs to reduce the need for rationing during a single-dry year when projected demand levels reach 300 mgd.

¹⁵ Current retail groundwater use does not offset potable supply and the water demand supplied by groundwater is not considered in the retail demand. Thus, the approximately 2.5 mgd of groundwater currently used for Golden Gate Park, San Francisco Zoo, irrigation on the Great Highway Median and 1 mgd used in Castlewood is not included in this table.

Multiple Dry-Years: Multiple-year drought sequences could subject the SFPUC customers to greater levels of shortage. Table 12 illustrates the level of water delivery shortages that would be anticipated if a three-year dry hydrologic condition occurred.

Table 12 Projected SFPUC RWS Supply and Demand Comparison Multiple Dry-years Multiple Dry Water Years Year 1 Year 2 Year 3 2005 SEPUC Demand 267 mgd 267 mad 267 mad 240 mad 214 mad 214 mad SFPUC RWS Supply Total 90% of Demand 80% of Demand 80% of Demand Year 2010 SEPUC Demand 277 mgd 277 mgd 277 mad 277 mgd 249 mad 249 mad SFPUC RWS Supply Total 100% of Demand 90% of Demand 90% of Demand Year 2015 SEPUC Demand 280 mad 280 mad 280 mad 280 mad 252 mad 252 mad SFPUC RWS Supply Total 100% of Demand 90% of Demand 90% of Demand Year 2020 SFPUC Demand 286 mgd 286 mgd 286 mgd 286 mad 257 mad 257 mad SFPUC RWS Supply Total 100% of Demand 90% of Demand 90% of Demand Year 2025 SFPUC Demand 293 mad 293 mad 293 mad 293 mad 264 mad 264 mad SFPUC RWS Supply Total 100% of Demand 90% of Demand 90% of Demand Year 2030 SFPUC Demand 300 mad 300 mad 300 mad 270 mgd 240 mad 240 mad SFPUC RWS Supply Total¹ 90% of Demand 80% of Demand 80% of Demand

Table Notes:

- . Year 1, full deliveries, 290 mgd or 100% of demand
- Year 2, full deliveries, 261 mgd or 90% of demand
- · Year 3, full deliveries, 261 mgd or 90% of demand

¹ The SFPUC is currently in the process to identify 10 mgd of groundwater, recycled water and conservation programs to reduce the need for rationing when projected demand levels reach 300 mgd. Assuming 10 mgd of supplies (SPPUC demand of 290 mgd), the level of rationing during a multiple-dry period would be:

7.2 Supply and Demand Comparison - SFPUC Retail

As described in Table 7 previously, and illustrated in Table 10, during non-critical years neither the SFPUC retail nor wholesale customers are anticipated to be curtailed in their SFPUC deliveries within the reporting period. However, as illustrated in Table 11 and Table 12, during single dry-year or multiple dry-year events the SFPUC system supply available to the SFPUC retail customers, as well as wholesale customers, may be limited.

The illustrations shown above depict anticipated SFPUC shortages on a system-wide basis. Historically, system-wide shortages have been applied to SFPUC wholesale and retail customers based on the circumstances occurring at the time. During the 1987-92 drought, procedures included considerations of anticipated impacts upon the system's end-user use of water. These considerations lead to a differing amount of delivery reduction to each SFPUC wholesale customer and to the individual retail customers.

The SFPUC and its wholesale customers negotiated an Interim Water Shortage Allocation Plan (IWSAP) in year 2000, that provides a fair and reasonable method for allocating water between the SFPUC and its wholesale customers during times of system-wide shortages up to 20 percent due to drought. Under the IWSAP, the SFPUC retail customers can translate a 10 percent system-shortage into a 6.9 percent shortage to retail deliveries, collectively. A 20 percent system-shortage can be translated into a 13.8 percent shortage to retail deliveries. A copy of the IWSAP is provided in Appendix C.

Single-Dry Year Event: For a single dry-year event, Table 13 on the following page illustrates the comparison between SFPUC retail demands and supplies for the reporting period.

Multiple Dry-Year Sequences: For 3-year multiple dry-year sequences, Table 14 illustrates the comparison between SFPUC retail demands and supplies for the reporting period.

As previously stated, this 2005 UWMP assumes that:

- 1. the resources identified in Section 5.4 will be available to the SFPUC RWS; and
- the supplies identified as "potential" water supplies are not quantitatively applied to meet retail customer demand because, at this point in time, it has not been determined how these resources will be used to benefit either SFPUC retail customers or the SFPUC Regional Water System.

Table 13 Projected SFPUC Retail Supply and Demand Comparison

Single Dry-year

	-		•			
	2005	2010	2015	2020	2025	2030
Retail Demand	92.4	92.0	91.9	92.1	92.6	93.4
SFPUC RWS Supply 1	82.8	88.5	88.4	88.6	89.1	84.3
Existing Groundwater	3.5	3.5	3.5	3.5	3.5	3.5
Deficit (does not include a reduction for potential groundwater, recycled water or conservation)	6.1	0	0	0	0	6.3
	Potential W	ater Suppli	es ²			
Potential Groundwater ³	0	2.0	2.0	2.0	2.0	2.0
Potential Recycled Water 4	0	0	4.1	4.1	4.1	4.1
Potential Conservation 5	0	3.1	3.76	4.2	4.4 6	4.5

Potential Resources
Units of Measure: mad

Notes:

 This 2005 UWMP assumes that the resources identified in Section 5.4 will be available to the SFPUC RWS

5 1

98

103

10.5

106

- The SFPUC is currently in the process of identifying 10 mgd of groundwater, recycled water and conservation programs to reduce the need for rationing when projected demand levels reach 300 mgd. It is believed that these projects could be within the retail service area. This would reduce the SFPUC demand in year 2030 by 10 mgd (a reduction in the SPPUC demand from 300 mgd to 290 mgd).
- 3. San Francisco is currently evaluating the potential for groundwater use in the Draft San Francisco Local Water Resources Study (SF LWRS). At this point in time, however, it has not been determined how these resources will be used to benefit either SFPUC retail customers or the SFPUC Regional Water System. Therefore, this source has not been quantitatively applied in this 2005 UWMP to meet retail customer demand.
- 4. Current recycled water use is less than 1 mgd and the water demand supplied by recycled water is not considered in the retail demand. San Francisco is currently evaluating the potential for recycled water use in the SF LWRS. At this point in time, however, it has not been determined how these resources will be used to benefit either SFPUC retail customers or the SFPUC Regional Water System. Therefore, this source has not been quantitatively applied in this 2005 UWMIP to meet retail customer demand.
- 5. The 2004, the SFPUC commissioned a report which evaluated the conservation potential within the City and County of San Francisco (City and County of San Francisco Retail Demand and Conservation Potential Technical Memo, Hannaford, November 2004). At this point in time, however, it has not been determined how these resources will be used to benefit either retail customers or the SFPUC Regional Water System. Therefore, this source has not been quantitatively applied in this 2005 UWMP to meet retail customer demand.
- Conservation savings presented are cumulative over time. For year 2015 and 2025, conservation savings has been estimated by linearly interpolating between conservation savings estimates for years 2010, 2020 and 2030.

Table 14
Projected SFPUC Retail Supply and Demand Comparison ¹
Multiple Dry-years

	Multiple Dry Water Years					
	Year 1	Year 2	Year 3			
Year 2005 Retail Demand	92.4 mgd	92.4 mgd	92.4 mgd			
SFPUC RWS Supply	82.8 mgd	76.6 mgd	76.6 mgd			
Existing Groundwater	3.5 mgd	3.5 mgd	3.5 mgd			
Deficit 2	6.1 mgd	12.3 mgd	12.3 mgd			
Potential Groundwater	0 mgd	0 mgd	0 mgd			
Potential Recycled Water	0 mgd	0 mgd	0 mgd			
Potential Conservation	0 mgd	0 mgd	0 mgd			
Year 2010 Retail Demand	92.0 mgd	92.0 mgd	92.0 mgd			
SFPUC RWS Supply	88.5 mgd	82.4 mgd	82.4 mgd			
Existing Groundwater	3.5 mgd	3.5 mgd	3.5 mgd			
Deficit ²	0 mgd	6.1 mgd	6.1 mgd			
Potential Groundwater	2.0 mgd	2.0 mgd	2.0 mgd			
Potential Recycled Water	0 mgd	0 mgd	0 mgd			
Potential Conservation	3.1 mgd	3.1 mgd	3.1 mgd			
Year 2015 Retail Demand	91.9 mgd	91.9 mgd	91.9 mgd			
SFPUC RWS Supply	88.5 mgd	82.3 mgd	82.3 mgd			
Existing Groundwater	3.5 mgd	3.5 mgd	3.5 mgd			
Deficit 2	0 mgd	6.1 mgd	6.1 mgd			
Potential Groundwater	2.0 mgd	2.0 mgd	2.0 mgd			
Potential Recycled Water	4.1 mgd	4.1 mgd	4.1 mgd			
Potential Conservation 3	3.7 mgd	3.7 mgd	3.7 mgd			
Year 2020 Retail Demand	92.1 mgd	92.1 mgd	92.1 mgd			
SFPUC RWS Supply	88.6 mgd	82.5 mgd	82.5 mgd			
Existing Groundwater	3.5 mgd	3.5 mgd	3.5 mgd			
Deficit 2	0 mgd	6.1 mgd	6.1 mgd			
Potential Groundwater	2.0 mgd	2.0 mgd	2.0 mgd			
Potential Recycled Water	4.1 mgd	4.1 mgd	4.1 mgd			
Potential Conservation	4.2 mgd	4.2 mgd	4.2 mgd			
Year 2025 Retail Demand	92.6 mgd	92.6 mgd	92.6 mgd			
SFPUC RWS Supply	89.1 mgd	82.9 mgd	82.9 mgd			
Existing Groundwater	3.5 mgd	3.5 mgd	3.5 mgd			
Deficit ²	0 mgd	6.2 mgd	6.2 mgd			
Potential Groundwater	2.0 mgd	2.0 mgd	2.0 mgd			
Potential Recycled Water	4.1 mgd	4.1 mgd	4.1 mgd			
Potential Conservation 3	4.4 mgd	4.4 mgd	4.4 mgd			
Year 2030 Retail Demand ⁴	93.4 mgd	93.4 mgd	93.4 mgd			
SFPUC RWS Supply	84.3 mgd	78.1 mgd	78.1 mgd			
Existing Groundwater	3.5 mgd	3.5 mgd	3.5 mgd			
Deficit ²	6.3 mgd	12.5 mgd	12.5 mgd			
Potential Groundwater	2.0 mgd	2.0 mgd	2.0 mgd			
Potential Recycled Water	4.1 mgd	4.1 mgd	4.1 mgd			
Potential Conservation	4.5 mgd	4.5 mgd	4.5 mad			

SEE NEXT PAGE FOR TABLE NOTES →

Table 14 Notes:

- 1 This 2005 UMMP assumes that the resources identified in Section 5.4 will be available to the SFPUC RWS. Additionally, San Francisco is currently evaluating the potential for groundwater, recycled water use and conservation within the City and County of San Francisco in the SF LWRS. At this point in time, however, it has not been determined how these resources will be used to benefit either SFPUC retail customers or the SFPUC Regional Water System. Therefore, these sources have not been quantitatively applied in this 2005 UMMP to reduce the "Deficit" as computed in Table 13.
- "Deficit" is computed by subtracting the SFPUC system supply from the retail demand for the specified year.
- Conservation savings presented are cumulative over time. For year 2015 and 2025, conservation savings
 has been estimated by linearly interpolating between conservation savings estimates for years 2010,
 2020 and 2030.
- 4. The SFPUC is currently in the process of identifying 10 mgd of groundwater, recycled water and conservation programs to reduce the need for rationing when projected demand levels reach 300 mgd. Assuming 10 mgd of supplies in the retail service area would reduce the retail demand in year 2030 to 83.4 mdd. Projected deliveries during a multiple-dry vear period would be:
 - Year 1, full deliveries, 83.4 mgd or 100% of demand
 - · Year 2, full deliveries, 77.8 mgd or 90% of demand
 - · Year 3, full deliveries, 77.8 mgd or 90% of demand

Section 8: Water Demand Management Measures

This section provides a description of the SFPUC's water demand management measures, including those currently being implemented or scheduled for implementation.

8.1 Introduction

San Francisco and its customers have a proven record of commitment to demand-side management programs. This commitment was demonstrated early on, with the inauguration of high bill inspections in 1928, and continues today with the SFPUC's recent receipt of the award for "Best Conservation Program-Large Utility" by the California Municipal Utilities Association (March 2000).

San Francisco's per capita water use has dropped by about one-third as a result of conservation programs. The first substantial decrease came following the 1976-77 drought in which gross per capita water use dropped from 160 to 130 gpcd. And despite continuous growth in San Francisco since then, water demands have remained lower than pre-drought levels.

A second substantial decrease in water use within San Francisco occurred as a result of the 1987-92 drought when a new level of conservation activities resulted in further water use savings. It is anticipated that through the continuation and expansion of these programs, per capita water use will continue to decrease into the future. Current gross per capita water use within San Francisco is 112 gallons per capita per day (gpcd) with residential water use calculated to be approximately 62 gpcd, the lowest use of any major urban area in the state.

The following provides a discussion of San Francisco's demand management programs, which range from financial incentives for plumbing devices to improvements in the distribution efficiency of the system.

8.2 Distribution Efficiency

An efficient distribution system is a key factor in ensuring efficient water use. The difference between the amount of water produced or purchased by an agency and the amount recorded as sold at customers' meters is referred to as unaccounted for water. Some amount of loss in distribution is unavoidable -- due to necessary, but un-metered uses such as fire fighting, main flushing, and storage facility cleaning. However, a portion of a system's losses can be controlled.

San Francisco has an ongoing program to minimize the loss of water within its distribution system. Measures include regular investments in replacement of old, leak-prone mains with new pipe, systematic leak detection programs and regular meter calibration and repair programs. The result of these activities is a reduced unaccounted for water level within San Francisco -- of approximately six to nine percent of total water production. 16 Additional activities associated with monitoring and controlling water losses are discussed later on in this section (refer to BMP 3).

¹⁶ The American Water Works Association industry standard for system losses is 10 percent.

8.3 Demand Management BMPs

The conservation programs implemented by the SFPUC are based on the California Urban Water Conservation Council's (CUWCC) list of 14 Best Management Practices (BMPs) identified by signatories of the Memorandum of Understanding Regarding Urban Water Conservation California (MOU) in 1991. The SFPUC is one of the original signatories to the MOU. Almost fifteen years in the making, the MOU is a unique achievement in the field of water conservation.

The BMPs identified in the MOU describe actions and activities that encourage water conservation and are a result of balanced collaboration of urban water agencies, public interest organizations and private entities.¹⁷ The MOU recognizes the evolutionary nature of water conservation measures and makes provisions for the removal or addition of BMPs as the technical and economic reasonableness of measures are determined.

The current BMPs are:

- Interior and Exterior Water Audits and Incentive Programs for Single Family Residential and Multi-Family Residential Customers
- 2. Residential Plumbing Retrofit
- 3. System Water Audits, Leak Detection and Repair
- Metering With Commodity Rates For All New Connections And Retrofit Of Existing Connections
- 5. Large Landscape Conservation Programs and Incentives.
- 6. Horizontal Axis Washer Rebate Programs
- 7. Public Information
- 8. School Education Programs
- 9. Commercial, Industrial and Institutional Water Conservation
- 10. Wholesale Agency Assistance Programs
- 11. Conservation Pricing
- 12 Conservation Coordinator
- 13. Water Waste Prohibition
- 14. Residential ULFT Replacement Programs

The MOU also created the California Urban Water Conservation Council (CUWCC) which is charged with certain responsibilities and authorities, including but not limited to recommending study methodologies for BMPs, collecting and summarizing information on implementation of BMPs and making annual reports to the State Water Resources Control Board. The SFPUC has been an active member of CUWCC throughout its existence, currently serving as vice-convener of the steering committee.

Signatories of the MOU are required to submit bi-annual reports to CUWCC outlining progress toward implementing the BMP process. San Francisco's 2004 bi-annual report to CUWCC, which satisfies portions of the Urban Water Management Planning Act, is incorporated in this Urban Water Management Plan by reference.

A summary of San Francisco's progress with the BMPs is provided in this section. The current BMP activity and coverage reports submitted by the City to CUWCC are provided in Appendix D. Future planned activities and programs of SFPUC's retail water conservation program are presented in Section 8.5.

BMP 1 -- Interior and Exterior Water Audits for Single Family and Multi-Family Customers

San Francisco has provided a water audit program to the residential accounts since the 1920s focusing on the identification and repair of leaks, as well as promoting any ongoing rebate programs for efficient fixtures. As incentive, bill adjustments are provided to customers who repair leaks that have resulted in high water bills. Since 1988, San Francisco has conducted water audits on almost 36,000 out of 108,000 single-family accounts and 54,000 out of 228,000 multi-family accounts, accounting for 22 and 24 percent of the respective housing populations.

San Francisco's program specifically targets the top 20 percent of water users in the single and multi-family residential sector. Customers on the list are notified by letter and encouraged to take advantage of the free water audit program.

The audits are conducted by the SFPUC's Water Conservation Inspectors and are free of charge to customers. During the audit, the inspector monitors the site's meter, laundry area, water heater, plumbing fixtures and landscape if applicable. Depending on the size of the building, the inspector will then typically inspect 25-50 percent of all of the building's apartments or flats to identify additional leaks.

Multi-family accounts that purchase four or more toilets from the SFPUC or that have purchased toilets four or more toilets through the rebate program also receive a conservation audit to ensure that the fixtures have been installed.

For each site, the inspector will create a checklist on needed repairs and give a copy of the checklist to the owner or manager. A formal written report is then returned to the owner or manager. At the request of the customer, the inspectors will mark the building's water shut-off valve with a plastic tag to improve its visibility in case of an emergency.

The SFPUC alternates its water audit targets throughout the year between single-family, multi-family, and commercial accounts therefore certain customer classes may receive disproportionately more (or less) audits during the year. For example, in reporting period 2003-04, the SFPUC did not meet the BMP defined target of 20% for audits on multi-family accounts because the focus for most of the year was on single-family customers. However the program has already met the 10-year BMP goal for both single and multi-family accounts.

¹⁷ Voting is balanced between water agencies and public interest groups. Private entities do not have voting rights.

BMP 2 -- Residential Plumbing Retrofit

Beginning with the adoption of Ordinance 392-9018 in December 1990, San Francisco began efforts to require customers to install water-conserving devices. This ordinance changed San Francisco plumbing codes to require all new buildings (and all buildings in which the water drainage system is substantially altered modified or renovated) to retrofit toilets and urinals with fixtures using no more than 1.6 gallons per flush (gpf) and 1 gpf, respectively.

San Francisco followed the "new construction" ordinance with a series of additional ordinances. which address conservation within existing dwellings. In May and September 1991, San Francisco adopted Ordinance 185-91 and Ordinance 346-9119. Collectively these ordinances require water conservation device retrofits within multi-family and single-family residential buildings upon sale, transfer of title, or major improvement to a dwelling. Those that have installed efficient devices are eligible for a lower water rate to further encourage conservation. Retrofit requirements include:

- Installation of Showerheads with a capacity not exceeding 2.5 gallons per minute,
- Installation of aerators attached to sinks and basins where possible, and
- · Installation of flush reducers, flow restrictors, volume reducers, or toilets with a capacity not exceeding 3.5 apf.

The SFPUC is currently working on updating the ordinances, reducing toilet flush volume to 1.6 gpf from the current 3.5 gpf.

Ordinance 359-9120, passed in September 1991 required the same plumbing retrofit requirements for commercial buildings, including tourist hotels and motels.

BMP 3 -- System Water Audits, Leak Detection and Repair

Unaccounted for water losses are common in water delivery systems and are generally defined as the difference between the amount of water produced or purchased by an agency and the amount recorded as sold at customers' meters. Some amount of loss in distribution is unavoidable due to necessary, but un-metered uses such as fire fighting, main flushing, and storage facility cleaning. A portion of a system's losses, however, can be controlled, such as from leaks, breaks or overflows. Therefore, water loss can be broken into two key components - apparent losses and real losses. Apparent losses include potential inaccuracies associated with metering, data handling, water bill estimating and water theft. Real losses are physical losses, which include things such as leaks, breaks and overflows.

San Francisco has an ongoing program to minimize the loss of water within its distribution system. Measures include regular investments in replacement of old, leak-prone mains with new pipe. systematic leak detection programs and regular meter calibration and repair programs. Since the 1970s. San Francisco has implemented system-wide leak inspection and repair programs to reduce distribution system losses. Beginning in 1990, an innovative leak inspection program was

19 San Francisco Housing Code, Chapter 12A, Section 12A01-12A14

¹⁸ San Francisco Plumbing Code sections 905 and 1001.1

²⁰ San Francisco Building Code, Chapter 53B, Sections 53B01-53B15

instituted using advanced pitometer measurements and system zone analysis which involved manually sounding water mains to identify leaks. Zones for inspection were selected for evaluation by factors including age of the water mains, results of previous measurements and the time since last evaluation.

More recently. San Francisco has enhanced its ability to identify leaks within its distribution system through the use of Permaloggers, which are devices that electronically "listen" for leaks. The Permaloggers are being used in coordination with the regular unidirectional flushing program (system flushing), allowing them to be installed efficiently in the main valves after they have been cleaned in preparation for flushing. The program began in January of 2005 and during the first six months of the new program 60 miles of the 1,200 mile distribution system has been evaluated.

The result of these activities has been a reduced unaccounted water level within San Francisco of approximately six to nine percent of total water production.²¹ The SFPUC currently estimates its system water losses to be around 7.3 mad (or about 9.6% of the City metered use or 8.8% of the total water delivered to the City). This figure is a rough estimate based only on review of historical deliveries within the SFPUC and conveyance metering records for the water system. Consequently, it is difficult to use this existing information to determine how well the system is performing or where there is true potential for lowering system losses (real losses) or capturing related losses in revenue (apparent losses).

While current SFPUC operations include the activities described above to minimize water losses, currently San Francisco is not in compliance with BMP 3. Therefore, the SFPUC is preparing to carry out a formal auditing project which will effectively identify, quantify, monitor, and control water losses. In order to ensure accountability and efficient operation of the water system, this project will entail the following components:

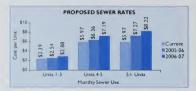
- Converting existing water audit data to the new recognized, approved, and standardized American Water Works Association (AWWA) best practice water balance, which is specifically designed to promote reliable water use tracking and control unnecessary water and revenue loss in drinking water utilities; this step will ensure accountability and efficient operation of the water system; and
- · Field verification and testing to ensure the accuracy of data (consumption volume, etc.) entered into the system.

The audit will determine the types of losses in the SFPUC system, evaluate the economic viability capturing these losses, and eventually implement the tools necessary to reduce the losses. Once this evaluation has been completed, San Francisco will be in compliance with this BMP.

BMP 4 -- Metering with Commodity Rates for All New Connections and Retrofit of Existing Connections

All of San Francisco's retail customers have been metered since 1916, and are billed by volume for both water and sewer use. On July 1, 2005, the SFPUC implemented a tiered sewer rate structure that promotes conservation by sending appropriate price signals.

²¹ The American Water Works Association industry standard for system losses is 10 percent.



As shown in the chart above, for Fiscal Year 2006, the residential sewer rate is \$2.54 per Ccf for the first 3 Ccf of sewer discharged per dwelling unit, \$6.36 per Ccf for the next 2 Ccf of sewer discharged per dwelling unit, and \$7.27 per Ccf for all remaining usage. Non-residential sewer rates vary by the level of pollutants in the sewage discharged; the more polluted the sewage, the higher the sewer service charge per Ccf.

The SFPUC will be introducing a similar tiered conservation structure for water rates. Currently, the SFPUC is bound by Proposition H, passed in 1998, which restricted the SFPUC's ability to increase or restructure water rates. Proposition H expires in 2006 and until the statutory context permits restructuring of the water rates, the SFPUC will continue to use a uniform volumetric charge for water. For Fiscal Year 2006 (July 1, 2005 - June 30, 2006), the water rate is \$1.71 per Ccf of metered water use. In addition, all water customers are charges a monthly service fee that varies based on tap size, from \$4.60 per month for most residential taps to \$544.40 per month for very large taps.

While a tiered conservation rate structure for water rates is not yet in place, San Francisco does currently use conservation pricing to promote the installation of efficient plumbing fixtures by retail customers. Customers who have retrofitted their plumbing fixtures, and filed an affidavit to that effect, are charged 50% less than those that have not.

BMP 5 -- Large Landscape Conservation Programs and Incentives

San Francisco has a large landscape conservation program, which targets commercial, industrial, residential and governmental water users irrigating three acres or more. San Francisco requires separate meters on all irrigated park areas, median traffic strips, landscaped public areas, landscaped areas surrounding multi-residential and commercial developments, and industrial parks. Under current accounts, about 3 percent of San Francisco's water use is for irrigation. To promote efficient water use in new and renovated landscaping, Ordinance 92-9122 was passed in 1991. The ordinance applies to any new commercial, governmental or residential (two or more units) building on a lot exceeding 3,500 square feet with a landscaping area of more than 1,000 square feet. The ordinance requires that the Conservation Administrator approve landscape, irrigation, and soil amendment plans prior to having the meter approved for installation.

The specific requirements of the ordinance include:

 Total area devoted to turf grass; decorative water use and water intensive planting must be limited to 15% of the parcel area. The limitation does not apply to children's play areas, public recreation areas or other such areas.

²² San Francisco Administrative Code, Chapter 63, 63-63.11

- Strips of turf less than 8 feet wide are prohibited.
- Water intensive plants must be grouped together and must be irrigated on a separate cycle from turf grass.
- Slopes exceeding 10% adjacent to the hardscape cannot consist of turf grass.
- All large areas must have separately metered irrigation systems.
- Valves and circuits shall be separated based on water use and must be set to operate between 5 p.m. and 10 a.m.
- A soil analysis must be done on the soil used for the landscape. A report specifying how
 the soil deficiencies will be meet must accompany the application for the meter.

Revised in September 2000, the ordinance further requires that any commercial meter application with a landscape of more than 1,000 square feet must also meet the same requirements.

The SFPUC ensures compliance with the ordinance by reviewing the applicant's landscape and irrigation plans as well as the soil analysis, and an applicant's plans for meeting any deficiencies identified in the soil analysis. If the plans do not meet the requirements of ordinance, the applicant is required to change the landscaping plans.

Irrigation surveys have been conducted for all of San Francisco's large irrigation accounts in order to establish a voluntary water budget account included on each water bill. The large irrigation accounts, are predominantly owned and operated by the National Park Service and the San Francisco Department of Recreation and Parks. Many of the large irrigation customers have several irrigation accounts, for example Golden Gate Park and McLaren Park. Initial surveys for all large irrigation accounts were conducted between 1992 and 1995. Follow-up surveys generally occur on a biennial cycle. In FY 98-99 and 99-00, the Conservation Inspectors completed 1,565 inspections on SFWD's 1,200 irrigation accounts. During the audit, the inspector surveys the irrigation system to identify inefficient water application and leaks in the system.

The San Francisco Water Department also prints out an irrigation budget based on the account's landscape size and the ETo for all of its 1,200 irrigation accounts on their monthly meter bills. A bill message alerts the customer when they have exceeded their budget and indicates their water budget for the next billing period.

BMP 6 -- Horizontal Axis Washer Rebate Program

In 1999, the SFPUC began a \$75 washer rebate program for its residential customers, current rebates range from \$100 to \$200, depending on size and efficiency of the machine. Four hundred rebates were distributed during 1999. In 2004, the program was expanded to include commercial customers. To date, the SFPUC has rebated over 3,000 washers. The SFPUC is meeting the coverage requirements for BMP 6.

BMP 7 -- Public Information

San Francisco promotes water conservation through a variety of outreach efforts including brochures, public service announcements, radio spots, newspaper ads, bus interior posters, bill inserts, direct mailings, "attention-getters", presentations and bill messages. In addition to the brochures listed above, San Francisco has developed and maintains numerous other publications for public distribution, such as these which are currently available:

- Installing Retrofit Devices
- · Apartment Residents, If You Don't Think You're Paying for Water.... Then you're all wet.
- Water Conservation Checklist (English and Chinese)
- Water-wise Gardening Basics
- Water-Wise Plants
- How to Read Your Water Meter
- · Use Your Meter to Check for Leaks
- · Maintaining an Irrigation System
- · Free Water Conservation Checkup
- Installing a Water Efficient Toilet (English, Chinese, Spanish)
- Fixing a High Water Level in Toilet Tank
- · Testing for Leaks
- Basic Toilet Assemblies
- · Home Composting
- Fertile Soil
- · What To Do About Weeds
- . S.F. Water.... Too Good To Waste (bumper sticker)
- SAVE WATER SAVE MONEY: Cash rebates, free fixtures and water saving tips for home and business.
- How to Look Good to Your Boss
- · Water Conservation starts with you. Be a Water Wise Tenant
- · Toilets: Save Water and Money with today's High-efficiency Models
- · Clothes Washing Machines: Clean Up on Saving with Today's High Efficiency Models
- · Shutting Off Water in an Emergency
- Toilets 101
- Receive <u>Hundreds Of Dollars</u> In Rebates And <u>Save On Your Bills</u> When You Install New Water-Smart Appliances In Your Home Or Business (in English, Chinese, Spanish.)
- Native Plant Gardening
- Your SEPUC Bill Has a Brand New Look!
- . Being Green Can Help Your Business Stay In The Black
- 2005-06 Water and Wastewater Rates (provided in English, Spanish and Chinese)
- CAP Discount Now 35% (Community Assistance Program)
- SFPUC Public Service Numbers
- Water Conservation Starts At Home (Magnet)
- · SFPUC Hetch Hetchy Water System (poster)
- Hetch Hetch Water System (cartoon poster)
- · San Francisco Water System (cartoon poster)
- San Francisco Urban Water Cycle

For several years, San Francisco has marketed its "Toilets for \$10" program which includes distributing 100,000 door hangers; acquiring radio spots in Cantonese, Spanish, Japanese and English; printing newspaper ads in English, Spanish, Chinese, Russian and German; mounting interior bus shelter posters; distributing 200,000 direct mailers each year; providing bill inserts and doing presentations on radio talk shows in English, Spanish and Cantonese. Today, San Francisco offers a two-tier rebate structure for low-volume flush toilets. San Francisco offers \$25 rebates for ultra low flow toilets (1.6 gallon per flush toilets) and \$125 rebates for high efficiency toilets or HETs (rated at about 1.0-1.2 gallon per flush). The goal is to catalyze a market transformation towards HETs which, unlike ULFTs, are not otherwise captured in the plumbing codes.

San Francisco has created videos available for free rental on how to install toilets and lead-free faucets in English, Spanish and Cantonese. The City has also been reaching the public directly through its billing process. On each bill, the account's current average daily water use is shown in comparison to its water use during the same period of the previous year. The bill also provides helpful water-saving tips for home and business owners. This information is helpful for the public to recognize their water use trends and alert them to any significant leakage issues.

BMP 8 -- School Education Programs

San Francisco works with the San Francisco Unified School District's Environmental Education Program, offering presentations to teachers and approximately 12,000 students each year about water and other environmental issues. San Francisco also makes presentations each year on how San Francisco gets its water, the water cycle and careers within the Water Department. In addition, the SFPUC has created a two-piece map series of the Hetch Hetchy/Peninsula Water Supply System and San Francisco's Water Distribution System for teachers of upper elementary grades. The SFPUC has also provided support and funding to teacher training programs that include a water conservation element in the curriculum.

For over ten years, San Francisco has sponsored a calendar contest for third, fourth, fifth and sixth graders. Following the California Water Awareness Month's theme, the contest encourages students to think about water conservation. The winning entries are showcased as a wall calendar.

BMP 9 -- Commercial, Industrial and Institutional Water Conservation

The SFPUC is meeting the coverage requirements for BMP 9. Similar to the single-family audit program, San Francisco has offered a commercial and industrial audit program to identify and repair leaks. Since 1989, the SFPUC has conducted conservation audits on almost 13,000 CII accounts.

San Francisco's municipal and industrial water use audit program includes the review of the following items when applicable: plumbing fixtures, cooling towers, meter(s), laundry facilities, kitchens, restrooms, boilers and landscape. In 1998 and 2000 San Francisco targeted the top 20 percent of its commercial and industrial accounts to participate in the conservation audit program. These large commercial and industrial customers received a letter informing them of their high use status and encouraging their participation for a free audit.

In 1999, the SFPUC worked with San Francisco's Department of the Environment to pass an ordinance, Ordinance 148-99²³, requiring all municipal buildings to replace their water-inefficient toilets with 1.6 gallons per flush toilets and showerheads with 1.5 gallons per minute showerheads. In July 1999, the San Francisco Board of Supervisors passed an ordinance requiring that all municipal buildings be in compliance with the requirements by June 6, 2005.

The ordinance also requires monitoring to ensure progress of the City departments on these two goals. San Francisco owns approximately 2,200 buildings that have 9,900 toilets and 1,000 showerheads. To gauge the progress of the ordinance, the Water Department conducted 271 inspections on City department municipal accounts. Approximately 98 percent of all municipal buildings in San Francisco have been retrofitted with the required plumbing fixtures.

New Commercial and Industrial Water Use Review: Before receiving a certification of occupancy, all new commercial and industrial buildings must have an inspection by an inspector from the Department of Building Inspection that includes verification of water-efficient plumbing, recirculating cooling towers and other water efficient plumbing fixtures.

BMP 10 -- Wholesale Agency Assistance Programs

The SFPUC has long-term sales contracts with its wholesale customer agencies. Under the terms of these contracts, the SFPUC can only charge its wholesale customer agencies for the sale of water. Because of this, the SFPUC cannot use these revenues to fund conservation activities. Therefore, the SFPUC's conservation activities are confined to providing technical (on a limited basis) and administrative assistance to its wholesales customer agencies. Examples of such assistance include the following:

- In FY 2003-2004, the SFPUC participated in the CUWCC Pre-Rinse Spray Valve Program.
 The SFPUC administered the program on behalf of its wholesale customer agencies that chose to participate.
- In Fall 2004, the SFPUC completed a series of comprehensive water demand and conservation potential studies with its wholesale customers.²⁴ (Refer to Section 8.4.2 for further details).
- In 2005, the SFPUC has been coordinating with it wholesale customer agencies to identify
 additional conservation, recycled water and renewable groundwater within the SFPUC service
 area. This effort will build upon the Fall 2004 wholesale conservation and retail conservation
 studies.

BMP 11 -- Conservation Pricing

For many years, San Francisco has used conservation pricing as an incentive to conserve water. To promote the installation of efficient plumbing fixtures, San Francisco implemented an incentive rate structure for its retail customers. Customers who have retrofitted their plumbing fixtures, and filed an affidavit to that effect, are charged 50% less than those that have not.

In addition to unit rate charges, San Francisco addresses water use violations through its rate schedule. Violations of any water use restriction may result in the discontinuance of water service or the installation of flow restricting devices. The costs of these actions are borne by the

²³ San Francisco Administrative Code, Chapter 82, Section 4.

Wholesale Customer Water Conservation Potential Technical Report (URS, Dec.2004).

customer.

On March 22, 2005, the SFPUC adopted a new conservation rate structure for sewer rates in which low levels of sewer use (0-3 units) are charged at a low rate, additional sewer use (4-5 units) is charged a higher rate, and high levels of sewer use (5+ units) are charged a higher rate.

In 1998, voters approved Proposition H, which, among other things, restricted San Francisco's ability to restructure water rates; currently, San Francisco is only allowed to apply the conservation rate structure to sewer rates, not water rates. Proposition H expires in 2006, and San Francisco anticipates implementing a conservation rate structure for water rates as soon as the statutory context allows.

Conservation staff are working with SFPUC Customer Services and Communications to include information on customer bills which would provide addition information such as: "if you conserved X gallons you would save \$Y."

BMP 12 -- Water Conservation Coordinator

San Francisco hired its first full-time water conservation administrator in 1986. The Water Conservation Section of SFWD has five full-time positions: the Conservation Administrator, two Inspectors, Water Conservation Clerk and a Toilet Rebate Coordinator.

The Conservation Section also uses high school interns. Working with the Mayor's Youth Works program, Vietnamese Youth Development Center and the Chinese Youth Development Center, the Conservation Section trains 2-3 interns each spring and fall and another 1-2 interns in the summer.

BMP 13 -- Water Waste Prohibition

In Section D of the SFPUC's Rules and Regulations for Water Service there is a provision regarding water waste prohibition. During the 1987-92 drought, San Francisco enacted numerous water use restrictions and prohibitions in response to the severe water shortage. These measures are discussed in the Water Shortage Contingency Planning section of this report. With the ending of the drought in 1993, San Francisco decided to continue certain water use restrictions in furtherance of a long-term conservation program. These measures are listed below and included in Section D of the SFPUC's Rules and Regulations for Water Service:

- Avoid water waste, including but not limited to flooding or runoff into the sewers or gutters.
- · Hoses used for any purpose must have positive shutoff valves.
- Restaurants shall serve water to customers only upon request.
- Decorative fountains must recycle water.
- Use of potable water for consolidation of backfill, dust control or other non-essential construction purposes is prohibited if other sources such as groundwater or reclaimed water are available and approved by the Department of Health.
- Water used for all cooling purposes and commercial car washes must be recycled.

Violation of any water use restriction may result in the installation of a flow-restricting device in the service line of the customer. Continued violation could result in termination of service. The customer bears the cost of any enforcement action.

BMP 14 -- Ultra Low Flush Toilet Replacement Program

San Francisco established a highly visible Ultra Low Flush Toilet (ULFT) residential rebate program in 1995 providing a rebate of up to \$50 per toilet. The rebate program, was expanded to include all non-residential customers in 2003, and in 2005, the rebates were tiered to provide higher rebates of \$125 for High Efficiency Toilets (HET). San Francisco has replaced 30,000 toilets since the rebate program's inception.

For many years, San Francisco also offered high quality, water efficient toilets for only \$10 to its residential customers each spring. This program, referred to as "toilets for \$10" has replaced over 30,000 toilets. This program in combination with the ULFT rebate program has been successful in replacing 12 percent of residential toilets in the City.

The "Toilets for \$10" program engages community groups and high schools in the transfer of the toilets to the intended customer. Through their help the volunteer group receives \$4 per toilet. In 1999, San Francisco was awarded "Best Community Partnership" from the California Water Awareness Campaign for this program.

Today San Francisco offers a two-tier rebate structure for low-volume flush toilets. San Francisco offers \$25 rebates for ultralow-flush toilets (1.6 gallon per flush toilets) and \$125 rebates for high efficiency toilets or HETs (reted at about 1.0-1.2 gallon per flush). The goal is to catalyze a market transformation towards the more efficient HETs, which, unlike ULFTs, are not captured in the plumbing codes.

The SFPUC is developing a retrofit on resale ordinance requiring water conservation device retrofits within multi-family and single-family residential buildings as well as commercial buildings upon sale, transfer of title, or major improvement. This will accelerate the replacement of inefficient devices.

8.4 Beyond the BMP's

8.4.1 Spray Valve Replacement Program

Starting in October 2004, the SFPUC participated in the "Rinse and Save" pre-rinse spray valve replacement program administered by the CUWCC. Rinse and Save is a direct marketing program which replaces older model valves, which flow at about 3 to 6 gpm, with a 1.6 gpm device (Fisher model 2949). The device and installation are free of charge to the customer. Over 2,000 valves have been installed to date.

8.4.2 Regional Coordination on Demand Management

On an ongoing basis, the SFPUC seeks opportunities to work with BAWSCA and its member agencies, other water agencies, including the SCVWD, to leverage available resources. For example, in 2005, the SFPUC and BAWSCA entered into a Memorandum of Understanding (MOU) regarding the administration of a Spray Valve Installation Program. Through this MOU, SFPUC and BAWSCA work cooperatively to offer and coordinate installation of water conserving spray valves to food service providers in the SFPUC retail and BAWSCA member service areas. Recently the Bay Area Efficient Clothes Washer Rebate Program, a single rebate program offered by all major water agencies in the greater Bay Area including BAWSCA and the SFPUC, was recipient of \$1.5M in Proposition 50 grant funds for implementation as early as FY 2006/2007.

In Fall 2004, the SFPUC completed a series of comprehensive water demand and conservation potential studies with its wholesale customers. The conservation study evaluated the cost-effectiveness of 32 conservation measures and the resultant water savings potential for each individual wholesale customer. The study presented a range of potential for conservation savings in the SFPUC wholesale service area. The results of the study have been used by the SFPUC wholesale customers to develop future SFPUC purchase estimates and to design conservation program activities.

The SFPUC, BAWSCA and its member agencies are currently investigating opportunities for implementing regional conservation measures for the entire service area that look beyond local issues of supply and cost-effectiveness to examine costs, benefits and other related issues on a system-wide level. The goal is to maximize the efficient use of water regionally by capitalizing on variations in local conditions and economies of scale.

8.5 SFPUC's Planned Retail Water Conservation Program

Section 8.3 presented SFPUC's retail water conservation activities as they relate to the California Urban Water Conservation Council's (CUWCC) list of 14 Best Management Practices. This section presents the findings of a cost-benefit analysis completed by the SFPUC to identify the most appropriate and effective water conservation measures for future implementation in San Francisco. As a result of this analysis, the SFPUC has identified a package of conservation measures, also described below, that it plans to pursue for implementation.

8.5.1 Effectiveness of Water Conservation Measures

Per capita water use in San Francisco has been declining since the early 1980s and is one of the lowest in the region and the state. Between 1994 and 2000 residential per capita water use has decreased from 74 gallons per capita per day (gpcd) to 62 gpcd. It is assumed that much of the decrease in per capita use is a result of San Francisco's long-term conservation programs and a change in water use habits. However, as detailed in this section, the SFPUC estimates that approximately 4.5 mgd of additional water conservation can be achieved by 2030 and San Francisco is currently working to further identify, quantify, and develop programs to capture these savings.

In 2004 the SFPUC utilized an end-use model to model water use in the City, based on customer type, demographic data, economic projections, water end use, and market penetration of various low volume plumbing fixture, among other things, in order to develop a long-term conservation program. The end-use based demand model examined water use characteristics in three sectors: single-family residential, multi-family residential, and non-residential (commercial, industrial and institutional or CII).

The SFPUC identified an extensive list of forty-eight different conservation measures by reviewing water conservation measures currently being implemented by the SFPUC and measures that other water agencies around the country have considered or are currently implementing. A screening process was then undertaken in which the water savings potential of each measure was quantified, along with the cost and feasibility of implementation based on the service areas use patterns. Based on this benefit-cost analysis, the initial list of conservation measures was

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²⁵ Certain characteristics unique to the City, primarily its relatively low outdoor water use, factor into this comparison.

reduced to thirty-eight measures that were considered the most appropriate for San Francisco. The thirty-eight water conservation measures that remained after the screening process were packaged into three distinct conservation program options [Packages A, B and C], each moreasing in water savings potential. Table 15 below summarizes these findings:

TABLE 15				
SFPUC Retail Conservation Packages - Evaluation Results				
	Package A	Package B	Package C	
Number of Conservation Measures Included in Package	12	32	38	
Utility Cost of Water Saved (\$ AF)	\$325	\$260	\$255	
Present value of Total Water Utility Costs thru 2030 (\$1,000)	\$6,901	\$24.085	\$25.663	
Water Utility Benefit-Cost Ratio	3.31	4.14	4.22	
Expected Water Use Reduction by 2030	0.64 mgd	3.93 mgd	4.45 mgd	

Source: City and County of San Francisco: Retail Water Demands and Conservation Potential Technical Report (Hannaford, 2004). ²⁵

Notes:

- Computation based on 26-year period: year 2005 through 2030.
- Packages A, B, and D do not incorporate the savings generated by the natural replacement of plumbing fatures in accordance with the existing plumbing code. These plumbing code savings are estimated at 10.3 mod by 2000.

SFPUC will pursue the most aggressive conservation package identified (Package C) and has begun to implement the measures included in this package. In 5-year increments, the savings from this package of conservation measures is estimated as follows:

- Cumulative through Year 2010: 3.1 mgd
- c Cumulative through Year 2015: 3.7 mgd
- Oumulative through Year 2020: 4.2 mgd
 - c Cumulative through Year 2025: 4.4 mgd
 - Cumulative through Year 2030: 4.5 mad

Appendix E contains detailed tables from the evaluation of the conservation measures included in Package C.

In this 2005 UWMP, as previously stated, water conservation has not been quantitatively applied to meet retail customer demand because, at this point in time, it has not been determined how these conservation savings will be used to benefit either the retail customers or the SFPUC Regional Water System. In the San Francisco Local Water Resources Study ISF LWRS), however, the SFPUC is using the estimated water savings of this more aggressive conservation package in its evaluation of water supply options for San Francisco.

The following section provides more detail on these conservation measures that the SFPUC will

Some of the cata in Table 15 offers slightly from the data presented in the source occument ofted (Hannaford, 2004). This is due to adjustments completed in the modeling after publication of the 2004 Technical Report. An entata sheet will be issued by the SFPUC in the near future.

be pursuing in order to achieve the savings projected by the end-use model described above.

8.5.2 Conservation Measures for Future Implementation

The SFPUC has been implementing water conservation programs for its retail customers for over 20 years. These programs have historically been focused on residential fixture replacement, primarily showerheads, ultra low flow toilets and efficient clothes washers, and conservation inspection programs. Current SFPUC programs also include offering of free low-flow spray valve devices and installation to all food service establishments and other expansions in the non-residential sectors. Additionally, the SFPUC is using rates to encourage efficient use — a newly approved 3-tiered wastewater rate structure was approved in June 2005.

As describe in the previous section, in 2004 SFPUC conducted a detailed cost-benefit analysis in order to identify the most feasible and effective water conservation measures for San Francisco to pursue in the future. The study described water use in the City based on demographic data, economic projections, and water end use (how, why and where water is being used). The end-use model was then used to determine how the SFPUC could best promote more efficient use of water. Forty-eight conservation measures were identified, quantified for water savings, cost and feasibility of implementation. The results were used to choose and package the measures into three conservation program options (packaged), increasing in aggressiveness, cost and water savings. The SFPUC will pursue the most aggressive conservation package identified (Package C) and has beaun to implement the measures identified in this package.

One of the main findings of the cost-benefit analysis completed in 2004 was that the SFPUC should direct more conservation programs toward non-residential (commercial, industrial and municipal) customers, which have historically not been the focus of the City's conservation efforts. Although non-residential accounts use slightly less water than residential customers, water use by this sector is projected to grow, while residential use is expected to remain relatively flat. Additionally, lack of focus on these customers to date means that the potential for efficiency improvements in this sector are greater.

The individual water conservation measures to be implemented are listed below, along with their planned implementation schedule. For a more detailed description of these measures, refer to Appendix E.

SINGLE-FAMILY RESIDENTIAL (RSF)

Washing Machines (RFS-1)	Rebates for 25 gallon per load machines (2005-2006) Rebates for 17 gallon per load machines (2005-2006) Rebates for 17 gallon per load machines (2007-2014)	
Toilets (RFS-2)	Rebates for 6/3 dual flush or 4-liter toilets (2005-2014) Rebates 1.6 gallon per flush toilets (2005-2007) Require 1.6 gal flush toilets be installed at the time of sale (2005-2000)	
Public Information (RSF-3)	Public Information Program (2005-2030)	
Water Surveys (RSF-5)	Water Surveys – indoor and outdoor (2005-2030)	
Dishwashers (RSF-7)	Rebates for high efficiency dishwashers (2005-2014)	

MULTI-FAMILY RESIDENTIAL (RMF)

Washing Machines (RMF-1)	Rebates for 25 gallon per load machines (2005-2006) Rebates for 17 gallon per load machines (2005-2006) Rebates for 17 gallon per load machines (2007-2014)	
Toilets (RMF-2)	Rebates for 6/3 dual flush or 4-liter toilets (2005-2014) Rebates 1.6 gallon per flush toilets (2005-2007) Require 1.6 gal flush toilets be installed at the time of sale (2005-2030)	
Sub-metering Requirements for New Units (RMF-4)	Incentives for retrofitting sub-metering (2005-2014)	
Water Surveys (RMF-5)	Water Surveys – indoor and outdoor (2005-2030)	

NON-RESIDENTIAL (NR)

Landscape Audits (NR-1)	Landscape audits and financial incentives for irrigation upgrades (2005-2014)
Water Savings Awards (NR-3)	Award program for water savings by businesses (2005-2030)
Water Audit (NR-4)	Water Audits for non-residential accounts (2005-2030)
Urinals (NR-5)	Rebates for replacing high use commercial urinals with 0.5 gal/flush urinals (2005-2014) Require 0.5 gal/flush urinals in new buildings (2005-2030)
Toilets (NR-6)	Rebates 1.6 gallon per flush toilets (2005-2007)
Large Innovative Retrofit Incentives (NR-7)	Replace inefficient water using equipment (2007-2016)
Large New Project Incentives (NR-8)	Conservation incentives for new/proposed large non-residential projects (2007-2016)
Audits-Hospitals (NR-11)	Water audits for hospitals (2005-2014)
Audits-Laundry Self-serve Rebates (NR-12)	Offer incentives for replacement or lease of clothes washers in coin-operated laundries (2005-2010)
Audits-Schools and Universities (NR-13)	Provide water audits to schools and universities (2005-2010)
Audits-Schools and Universities Landscaping (NR-15)	Landscape audits and financial incentives for irrigation upgrades, schools/universities (2005-2014)
Low Flow Sprayers – Grocery/Flower (NR-18)	Grocery/Flower low flow spray rinse nozzles (2005-2009)
Low Flow Sprayers – Restaurants (NR-19)	Restaurant low flow spray rinse nozzles (2005-2009)
NR-19a Steamers – Restaurants (NR-19a)	Provide rebates for electric steam cookers to restaurants (2005-2009)
City/PUC Water Broom (NR-21)	Provide water brooms to City departments (2005-2009)
City/PUC Water Landscape (NR-21a)	Landscape audits and financial incentives for irrigation upgrades to all City departments (Years 2005-2014)
Water Broom (NR-22)	Provide water brooms to non-residential customers (Years 2005-2009)
NR-23 Audits-Hotel/Motels	Focused water audits for hotels/motels (Years 2005-2014)

Section 9: Water Shortage Contingency Plan

This section presents the SFPUC's water shortage contingency plan and includes the following information:

- An overview of SFPUC's response to past water shortage experiences;
- A summary of the procedures for allocating reduced deliveries from the SFPUC RWS;
- · A summary of San Francisco's retail plan for responding to water shortages; and
- An overview of San Francisco's preparation for a catastrophic interruption of water supply.

9.1 Introduction

Every water system has vulnerabilities in terms of its ability to provide a safe and reliable supply of water. Water shortages can occur in a number of ways. Very localized shortages can occur due to distribution system problems and system shortages may occur due to major facility failures. Yet, beyond system facility contingencies, there exists the potential vulnerability to drought, which limits the amount of water that is available over a series of years. This latter type of contingency is not necessarily caused by physical facility limitations. Within the last 15 years San Francisco has experienced both localized shortages due to earthquakes and system-wide shortages due to drought.

San Francisco's past experiences with water shortages, due to drought and earthquakes, have helped shape it's current plans and policies relative to water shortage preparedness and response:

- In 1987-92 San Francisco experienced a serious drought. This six year drought provides an example of how various stages of action were taken in times when the operational capabilities of Hetch Hetchy and other water supplies available to the SFPUC are taxed to a point that forces drastic actions to avoid running out of water.
- In 1989, San Francisco experienced the Loma Prieta earthquake. The SFPUC worked with the Mayor's Office of Emergency Response to reconnect service to those who were impacted by the earthquake. Most of the homes that lost water service were reconnected back to the water system's lines within 72 hours.

9.2 Management Response to Past Water Shortage Experiences

The 1987-92 drought illustrated the deficit between San Francisco's water supplies and its demands. Other than the 1976-77 drought, drought sequences in the past did not seriously affect the ability of the SFPUC to sustain full deliveries to its customers. As the SFPUC progressed into the drought and reservoir storage continued to decline, it became evident that full water deliveries could not be sustained without a risk of running out of water before the drought was over. This circumstance became a painful reality in early 1991 when the Hetch Hetchy Reservoir became so depleted (less than 25,000 acre-feet of storage in a reservoir with over 360,000 acre-feet of capacity) that minimum fishery releases and anticipated demands required the SFPUC to initiate programs to achieve a 45 percent reduction in system-wide water deliveries to balance water supplies with deliveries. Fortunately, unexpected runoff provided relief from the severity of that instance of water shortage; however, the drought was far from over. Appendix F provides a more

betailed summary of San Francisco's 1987-92 drought experience and the actions taken at the time

The SFPUC could not know how severe the 1987-92 drought would become. However, by necessity the SFPUC operated under a general procedure relating water supply and delivered. This procedure led to the implementation of water rationing. The procedure triggered different levels of rationing in relation to projected reservoir storage. less water in storage led to higher levels of rationing. The procedure was developed to protect water customers from being subjected to shortages in supply that could not be achieved by drought-related water demand reduction programs. The concept was to provide drought water delivery protection. That is, some level of assurance that water would be delivered continuously during drought.

SFPUC's response to water shortages also included adoption of new agreements regarding how water would be allocated in future drought periods, such as:

- The Interim Water Shortage Allocation Plan (WSAP) adopted in 2000, which, among other things, provides a fair and reasonable method for allocating water between the SPPUC and its wholesale customers during times of system-wide shortages up to 20 percent due to drought, and
- The Retail Water Shortage Allocation Plan (RWSAP), adopted in 2001, which describes the measures that would be implemented by the City to reduce water use in San Francisco burno a proudit.

The IMSAP is discussed in greater detail in Section 9.3 and the RWSAP is discussed in greater detail in Section 9.4.

More recently, in January 2005, the SFPUC Commission recommended a policy that drought-related delivery reductions irationing, should be considered when evaluating system performance in the Water System improvement Program (WSIP). The Commission recommended a reliability goal of 80 percent, i.e., the customers would be subjected to water belivery shortages of no greater than 20 percent in any one year, assuming no drought occurred greater than the Design Dirought. All planning currently being performed by the SFPUC related to the WSIP incorporates the Commission reliability objective of 80 percent. The WSIP PEIR will evaluate the impacts of this reliability goal while also evaluating the impacts of a reliability goal of 70 percent and 90 percent for comparison.

9.3 RWS Water Shortage Allocation Procedures

The SFPUC can meet the demands of its retail and wholesale customers in years of average and above-average preoptation. In order to plan for any needed allocation of water from the RWS in only years, the SFPUC and its wholesale customers negotiated an Interim Water Shortage Allocation Plan IMSAP) which was aborted in 2000. The IMSAP provides a fair and reasonable method for allocating water between the SFPUC and its wholesale customers during times of system-wide shortages up to 20 percent due to drought. In addition to providing an allocation method, the pival also identifies conditions for both voluntary and mandatory rationing, provides for excess use charges: establishes a water bank for use during droughts; and provides for transfers of banket water.

Prior to the adoption of the MISAP allocation of water from the RMS was based on the Settlement Agreement and Master Water Sales Contract (Master Contract), which allows the SFPUC to reduce water deliveries to wholesale customers during periods of water shortage. Under the current Master Contract, reductions to wholesale customers are to be based on each agency's proportional purchases of water from the SFPUC during the year immediately preceding the onset of shortage, unless this formula is supplanted by a water conservation plan agreed to by all parties. The Master Contract's default formula, because it was based on deliveries during the year immediately preceding the onset of the shortage, discouraged SFPUC's wholesale and restrict customers from reducing purchases from SFPUC during periods of normal water supply through demand management programs or development of alternative supplies. The IWSAP somewhat addressed this issue by basing the allocation formula on the three immediate years preceding the shortage and allowing transfers of banked water credits (water within a drought allotment that is not used).

The IWSAP has two components, as described below:

. The IWSAP Tier One Plan

The Tier One component of the IWSAP allocates water between San Francisco retail customers and the wholesale customer agencies collectively. The IWSAP distributes water between two customer classes based on the level of shortage:

Level of System Wide	Share of Available Water	
Reduction in Water Use Required	SFPUC Share	Suburban Purchasers Share
5% or less	35.5%	64.5%
6% through 10%	36.0%	64.0%
11% through 15%	37.0%	63.0%
16% through 20%	37.5%	62.5%

The Tier One Plan also addresses adoption and implementation of the Tier Two Plan (described below) and allows for voluntary transfers of shortage allocations between SFPUC and any wholesale customer and between wholesale customer agencies. Also, water "banked" by a wholesale customer, through reductions in usage greater than required, may also be transferred.

The IWSAP Among Suburban Purchasers (Tier Two Plan)

The IWSAP Tier Two Plan allocates the collective wholesale customer share among each of the wholesale customers. This allocation is based on a formula that takes three factors into account, the first two of which are fixed: (1) each agency's Supply Assurance from SFPUC, with certain exceptions, and (2) each agency's purchases from SFPUC during the three years preceding adoption of the Plan. The third factor is the agency's rolling average of purchases of water from SFPUC during the three years immediately preceding the onset of shortage.

Appendix C contains a copy of the IWSAP (Tier One Plan) and the IWSAP Among Suburban Purchasers (Tier Two Plan). Both components of the IWSAP will expire in June 30, 2009, unless extended by the SFPUC and the wholesale customers. This is likely to be a topic of discussion during pending negotiations for renewal of the Master Contract between the SFPUC and the wholesale customers of the RWS.

9.4 San Francisco's Retail Water Shortage Contingency Plan

During the 1987-1992 drought, the SFPUC experienced significant system-wide water shortages of 25 to nearly 45 percent. Subsequent to this experience, new plans and agreements were made regarding how water would be allocated in future droughts. As previously described (Section 9.3), the SFPUC and its wholesale customers adopted the *Interim Water Shortage Allocation Plan* (IWSAP) in 2000 which, among other things, provides a fair and reasonable method for allocating water between the SFPUC and its wholesale customers during times of system-wide shortages up to 20 percent. In December of the following year, the SFPUC adopted a *Retail Water Shortage Allocation Plan* (RWSAP), which describes a three-stage plan for water delivery reductions to SFPUC retail customers. This section provides a more detailed discussion of these plans.

9.4.1 Water Availability Assessment and Declaration of Shortage

In accordance with procedures set forth in both the RWSAP and ISWAP, each year the SFPUC forecasts the amount of water that will become available for its use. This water includes runoff from the local Bay Area watersheds and runoff within the Tuolumne River basin. This forecast is updated periodically during the year and is fairly certain by early summer. The forecasted water supply is then compared to the anticipated water demands of the SFPUC's retail and wholesale customers and other water obligations such as stream flow requirements below San Francisco's reservoirs. Also entering into this comparison are objectives for carry-over reservoir storage for drought water delivery protection.

In accordance with the IWSAP, the SFPUC will compare the available water supply with projected system-wide purchases. A shortage conditions exists if the SFPUC determine that the projected available water supply is less than the projected system-wide water purchases in the upcoming supply year (defined as the period from July 1 through June 30). If the RWS appears to be incapable of meeting system-wide demand due to a drought, the SFPUC would declare a water shortage by March 31st of that drought year.

In accordance with the RWSAP, prior to the initiation of any water delivery reductions in San Francisco, whether it be initial implementation of reduction delivery or increasing the severity of water shortage, the SFPUC would outline a drought response plan that would address the following: the water supply situation; proposed water use reduction objectives; alternatives to water use reductions; methods to calculate water use allocations and adjustments; compliance methodology and enforcement measures; and budget considerations. This drought response plan will be presented at a regularly scheduled SFPUC Commission meeting for public input. The meeting will be advertised in accordance with the requirements of California Water Code Section 6066 of the Government Code, and the public will be invited to comment on the SFPUC's intent to reduce deliveries.

Pursuant to the drought response plan, which the SFPUC would present to its Commission, a Water Shortage Resolution would be adopted by the Commission. Appendix G contains a copy of sample resolution. A copy of the resolution adopted during the drought in 1998 is included in Appendix F.

9.4.2 Three-Stage Program of Action

San Francisco has established criteria that relate water deliveries to water supply and SFPUC's objectives to manage water deliveries during extended drought. These criteria provide guidance to the SFPUC for the determination of the annual availability of water. The structure of the criteria was developed during the course of the 1987-92 drought and incorporates procedures which were implemented during actual operations.

The water delivery criteria established incorporate a three-level staging of delivery reductions, as summarized in Table 16 -- the first stage is associated with voluntary actions by customers and the second and third stages are associated with mandatory rationing programs enforced by the SFPUC. Depending on the level of water demand and the desired maximum delivery reduction, one, two or all three of the stages are required. These criteria have been found to be viable through computer simulation of historical drought events and resultant SFPUC operations.

Based on this past drought experience and the established criteria, San Francisco's Retail Water Shortage Allocation Plan was adopted to formalize the three-stage program of action to be taken in San Francisco to reduce water use during a drought. Depending on the level of water demand and the desired objective for water use reduction, one, two or all three stages of the RWSAP may be required

Table 16

SFPUC Retail Water Shortage Stages of Action

Stage 1 (Voluntary)

- · System-wide demand reductions of 5-10 percent experienced
- · Voluntary rationing request of customers
- · Customers are alerted to water supply conditions
- Remind customers of existing water use prohibitions
- Education on, and possible acceleration of, incentive programs (e.g., toilet rebates)

Stage 2 (Mandatory)

- System-wide demand reductions of 11-20 percent experienced
- All Stage 1 actions implemented
- All customers receive an "allotment" of water based on the Inside/Outside allocation method (based on base year water usages for each account)
- Water use above the "allocation" level will be subject to excess use charges, installation
 of flow restrictor devices and shut-off of water

Stage 3 (Mandatory)

- System-wide demand reductions of 20 percent or greater experienced
- . Same actions as in Stage 2 with further reduced allocations

First Stage Program (Voluntary):

The first stage of action will rely on a voluntary public response to a declared water shortage. The objective of this first stage of program is to achieve a system-wide reduction of 10 percent in water use.

San Francisco currently enforces numerous water use prohibitions and restrictions, and continues to use public information venues for the discouragement of wasteful uses of water. Examples of existing prohibitions include water waste, including but not limited to, any flooding or runoff into the street or gutters, and a requirement that restaurants only serve water to customers upon request.

Through an increase in public information dissemination, retail water customers will be alerted to the current status of water supply conditions and reminded of water use prohibitions and restrictions, as well as currently available incentives and programs that will lead to reductions in water use (such as rebates). The SFPUC may also choose to initiate new rebate programs for water-efficient fixtures ahead of their planned implementation dates, in order to receive the associated water savings in the near-term. Public information will also target discretionary uses of water.

The water use reduction goal of this first stage program would also be coordinated with voluntary actions and programs by San Francisco's wholesale water customers to reduce their water demands on SFPUC by 10 percent. The reduction of water demands to SFPUC from these customers may be achieved through a variety of alternative mechanisms available to each individual wholesale customer including increased utilization of alternative water supplies.

Second Stage Program (Mandatory):

The second stage of response will include a mandatory water delivery-rationing program. The objective of this second stage of program is to achieve a system-wide reduction of 12-20 percent in water use.

The second stage will entail the enumeration of additional water use prohibitions and restrictions with disincentive consequences resulting from retail water customer non-compliance (such as excess use charges, installation of flow restrictor devices, or shut-off of water). Appendix F contains on the excess use charges during the 1987-92 drought, as well as the fees that were charged for installation of flow restricting devices.

The specific prohibitions and restrictions that will be enforced will be determined at the time that the need for the second stage program occurs. The water use prohibitions and restrictions implemented by San Francisco's in the 1987-92 drought serve as a menu for potential actions to be adopted in time of need, and are listed below. Note that these prohibitions, and more, are listed in the RWSAP as prohibitions that may be enforced during a drought. The prohibitions are as follows:

- Water waste, including but not limited to, any flooding or runoff into the street or gutters, was prohibited.
- Hoses could not be used to clean sidewalks, driveways, patios, plazas, homes, businesses, parking lots, roofs, awnings or other hard surfaces areas.
- Hoses used for any purpose had to have positive shutoff valves.

- Restaurants served water to customers only upon request.
- Potable water was not to be used to clean, fill or maintain levels in decorative fountains.
- Use of additional water was not allowed for new landscaping or expansion of existing facilities unless low water use landscaping designs and irrigation systems were employed.
- Water service connections for new construction were granted only if water saving fixtures or devices were incorporated into the plumbing system.
- Use of potable water for consolidation of backfill, dust control or other non-essential construction purposes was prohibited.
- Irrigation of lawns, play fields, parks, golf courses, cemeteries, and landscaping of any type with potable water would be reduced by at least the amount specified for outside use in the adopted rationing plan.
- Verified water waste as determined by the Water Department would serve as prima facie evidence that the allocation assigned to the water account is excessive; therefore, the allocation was subject to review and possible reduction, including termination of service.
- Water used for all cooling purposes was to be recycled.
- The use of groundwater and/or reclaimed water for irrigation of golf courses, median strips, and similar turf areas was strongly encouraged.
- The use of groundwater and/or reclaimed water for street sweepers/washers was strongly encouraged.

The second stage program will also provide a specific goal for water use reduction by individual retail customers, and will be coordinated with identification of a water use reduction goal by the wholesale water customers, collectively. Individual retail customer water use, by account or entity, will be targeted for reduction through application of formulas, which consider historical use and indoor and outdoor water consumption. Compliance to water delivery allocations will be addressed through the assessment of excess use charges to those customers, which exceed their allocations.

As an incentive for San Francisco retail water customers to reduce their water, the acceleration of long-term water conservation programs may also be considered during the second stage program (such as the initiation of rebates prior to their planned implementation date).

The specific level of water use reduction that will be targeted by the second stage program is dependent on several factors, which include the current water supply condition and the characteristics of water demand after being affected by the first stage program.

Analysis of current water demand characteristics indicates that a permanent reduction (hardening) of water demand occurred as a result of conservation programs employed during the 1987-92 drought. While San Francisco's customers achieved almost a 30 percent reduction in pre-drought demands during one year of the 1987-92 drought, this level of accomplishment is not expected to be achievable subsequent to the drought on a sustained or short-term basis. It is estimated that implementation of programs similar in effect to those applied during the 1987-92 drought will achieve a 20 percent reduction in current water demands.

Third Stage Program (Mandatory):

The third stage program will be implemented at such time that water supply conditions reach a hydrologic circumstance not previously experienced by the SFPUC. The objective of the third stage program will be to achieve water use reductions in excess of 20 percent.

The third stage program will require additional retail water customer response to an increased number of enforced water use prohibitions and restrictions, and an increased level of rationing.

Appendix C contains a copy of the RWSAP. Also, Appendix F discusses various measures employed during the 1987-92 drought in an attempt to achieve a 45 percent reduction in retail water customer demands (as applied to the pre-drought demand). These measures included absolute limitations on water use based on residential customer classification and a proportion of historical use within the non-residential sectors. Although not anticipated to be required in the near-term, San Francisco would employ similar procedures to accommodate system-wide water shortages in excess of 20 percent, if necessary.

9.4.3 Reductions Required Above 20 Percent

In the 1987-92 drought, when reductions of over 20 percent were needed, San Francisco purchased water from the State Water Bank. In the future, if system-wide reductions were in excess of 20 percent, the SFPUC may employ the same Third Stage Program measures detailed above, with lower minimum and maximum criteria to achieve more reductions, or augment supplies through water purchases as it did in the past.

9.4.4 Mechanisms to Determine Reductions in Water Use

All SFPUC retail and wholesale customers are metered. Monthly water use reports are prepared by customer service. Based on a comparison between months the SFPUC is able to determine reductions in water use for both wholesale and retail customers.

9.4.5 Revenue and Expenditure Impacts During Water Shortages

The SFPUC uses a uniform volume charge. As a result, as sales decrease, revenues are lost on a per unit basis. Because the marginal cost of water production is miniscule, as production is reduced the cost of service remains the same. Therefore, during a water shortage, as occurred during the 1987-92 drought, the SFPUC may need to raise water rates to make up for lost revenue due to less water use. The SFPUC retail rates, however, are frozen until 2006 due to Proposition H. As a result, retail rates cannot be adjusted to make up for revenue shortfalls unless voters repeal the Proposition or the Mayor declares an emergency as provided for in the City's Charter. The SFPUC does maintain an unappropriated fund balance that can be used to offset the effects of revenue shortfall. In addition, the current contracts between the SFPUC and its wholesale customers allow the SFPUC to recover through rates the cost of water service to the wholesale customers.

9.5 Preparation for Catastrophic Water Supply Interruption

The SFPUC has various planning documents which in combination address its emergency preparedness and planned response in case of a catastrophic interruption of water supplies due to power outages, earthquakes or other disasters. Additionally, the SFPUC WSIP, previously discussed in this document, includes capital projects related to seismic reliability and overall system reliability.

9.5.1 Emergency Preparedness Plans

Following San Francisco's experienced in 1989 with the Loma Prieta Earthquake, the SFPUC created a departmental SFPUC Emergency Operations Plan (EOP). The SFPUC EOP, originally released in 1992, was updated in 2000 and again in 2004. The EOP addresses a broad range of potential emergency situations that may affect the SFPUC and that supplements the City and County of San Francisco's Emergency Operations Plan prepared by the Mayor's office in 1996 and update in 2005. Specifically, the purpose of the SFPUC EOP is to describe the department's emergency management organization, roles and responsibilities and emergency policies and procedures.

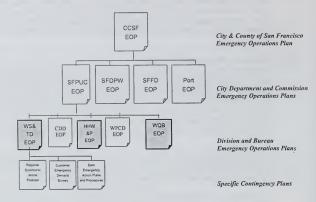
Also, SFPUC division EOPs and bureau EOPs have been developed that are in alignment with the SFPUC EOP and which describe each division's/bureau's emergency management organization, roles and responsibilities and emergency policies and procedures.

In February 2005, the SFPUC Water Quality Bureau published a City Emergency Drinking Water Alternatives report. The purpose of this project was to develop a plan for supplying emergency drinking water in the City after a major disaster damages and/or contaminates the SFPUC raw and/or treated water system. The report addresses immediate response after a major disaster. The recommended four-stage strategy developed by this project included the items listed below:

- Initial actions that build on existing resources at a relatively low cost and can be implemented quickly (such as public education and augmenting equipment & storage locations for SFPUC treated water);
- Items that provide additional emergency response capacity for some additional costs (such as upgrading existing groundwater wells for emergency use and new contracts and/or emergency clauses with vendors);
- Longer-range actions consistent with other planned activities that require coordination with other program to determine priorities for resources (such as accelerating implementation of WSIP project); and
- Items that are relatively higher cost and could be implemented in the future if there are multiple benefits with other projects/plans (such as RO Units – i.e, desalination).

With respect to emergency response for the SFPUC Regional Water System, the SFPUC has prepared the SFPUC Regional Water System Emergency Response and Recovery Plan (ERRP), completed in 2003. The purpose of this plan is to describe the SFPUC RWS emergency management organizations, roles and responsibilities within those organizations, and emergency management procedures. This contingency plan addresses how to respond to and to recover

from a major RWS seismic event, or other major disaster. The ERRP complements the other SFPUC emergency operations plans at the Department, Division and Bureau levels for major system emergencies. The various oldans are illustrated in the flow-chart below.



The SFPUC has also prepared in an SFPUC-Suburban Customer Water Supply Emergency Operations and Notification Plan. The plan was first prepared in 1996 and has been updated several times — most recently in April 2002 (revision 5). The purpose of this plan is to provide contact information, procedures and guidelines to be implemented by the following entities when a potential or actual water supply problem arises: the SFPUC Water Supply and Treatment Division (WS&TD), Water Quality Bureau (WQB), and SFPUC wholesale customers, BAWSCA, and City Distribution Division (CDD — considered to be a customer for the purposes of this plan, water quality issues are treated as potential or actual supply problems.

9.5.2 Capital Projects For Seismic Reliability and Overall System Reliability

As discussed previously in Section 5 (Reliability Planning), the SFPUC is also undertaking a WSIP in order to enhance the ability of the SFPUC water supply system to meet identified service goals for water quality, seismic reliability, delivery reliability, and water supply.

As illustrated previously in Figure 3, the WSIP projects include several projects located in San Francisco to improve the seismic reliability of the in-city distribution system, as well as many projects related to the SFPUC RWS to address both seismic reliability and overall system reliability. All WSIP projects are expected to be completed by 2016.

In addition to the improvements that will come from the WSIP, San Francisco has already constructed the following system interties for use during catastrophic emergencies, short-term facility maintenance and upgrade activities, and in times of water shortages:

- A 40 mgd system intertie between the SFPUC and the Santa Clara Valley Water District (Milpitas Intertie); and
- The SFPUC also has one permanent and one temporary intertie to the South Bay Aqueduct, which would enable the SFPUC to receive State Water Project water.

The WSIP includes intertie projects, such as the EBMUD-Hayward-SFPUC Intertie. The SFPUC and EBMUD are constructing this 30 mgd intertie between their two systems in the City of Hayward, as part of the WSIP. The expected completion date for this intertie is August 2006.

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Section 10: Water Recycling

10.1 Wastewater Generation, Collection, Treatment, and Disposal

San Francisco's wastewater collection, treatment and disposal system consists of a combined sewer system (which collects both sewer and storm water), three water pollution control plants (WPCP) and outfalls to San Francisco Bay and the Pacific Ocean. The collection and conveyance system consists of approximately 900 miles of various sizes of underground sewer pipes and transport structures located throughout the City. Two of the City's water pollution control plants, the Southeast WPCP and Oceanside WPCP, operate year-round, while the third plant, the North Point WPCP, operates only during wet weather. Ultimate disposal of treated wastewater effluent is currently through outfalls to both the San Francisco Bay and the Pacific Ocean.

The Oceanside WPCP, the City's newest treatment facility, was completed in 1993. This facility serves the westside of the City with a design average dry-weather flow of 15 to 20 mgd and a peak wet-weather flow 65 mgd (i.e. primary treatment capacity of 65 mgd, and secondary treatment capacity of 43 mgd). It provides primary and secondary-level treatment prior to discharge to the Pacific Ocean through a 4.5 mile Southwest Ocean Outfall. The Southeast WPCP, built in 1952, and later expanded between 1977 and 1982, is located on the eastside of the City and treats all eastside sewage flows during dry weather. This facility treats an average dry weather flow of 65 to 70 mgd and can treat up to 250 mgd during wet weather (i.e. primary treatment capacity of 250 mgd, and secondary treatment capacity of 150 mgd). Secondarytreated dry-weather effluent from the Southeast WPCP is discharged to the San Francisco Bay through Pier 80 Outfall. The North Point WPCP has been in operation since 1951. This facility provides primary treatment to combined flows collected in the northern area of the City during storm events and has a treatment capacity of 150 mgd. Primary-treated wet-weather effluent is discharged to San Francisco Bay, through outfalls at Piers 33 and 45. The City discharges approximately 87 mgd of treated wastewater during dry weather to San Francisco Bay and the Pacific Ocean.

10.2 Recycled Water Uses

10.2.1 Recycled Water Currently Being Used

The SFPUC is looking to expand the use of recycled water within the City. The amount of recycled water use presently within the City is limited. Currently, secondary-treated wastewater from either the Oceanside WPCP or the Southeast WPCP is used for wastewater treatment plant process water, wash down operations, sewer box flushing, soil compaction, and dust control during construction. Less than 1 mgd of recycled water is used for these purposes. If these WPCP's were upgraded to tertiary-level treatment, the potential uses of recycled water could be expanded to include uses that require a higher-level of treatment, such as irrigation at parks, various commercial and industrial uses, or environmental enhancements (such as lake recharge).

In addition to the existing recycled water uses listed above, the SFPUC provided funding to the North San Mateo County Sanitation District to upgrade their wastewater treatment plant to produce tertiary-level recycled water. This facility serves 2.77 mgd of recycled water to three golf courses, one located in the City of Daly City and two in the City and County of San Francisco, as well as serving other sites in Daly City for irrigation purposes. Use of recycled water at these locations offsets groundwater currently being used for irrigation.

In 1991, the San Francisco Board of Supervisors passed *Ordinances* 390-91 and 391-91²⁷ that outlined specific components to be addressed in the Recycled Water Master Plan, and defined recycled water use areas within San Francisco. The ordinances require dual plumbing system installation within the designed recycled water use areas for the following situations:

- New or remodeled buildings and all subdivisions (except condominium conversions) with a total area of 40,000 square feet or more
- New and existing irrigated areas of 10,000 square feet or more

The SFPUC first developed a Recycled Water Master Plan that outlined a phased water recycling project for San Francisco in 1996. The Plan was taken before the Commission but was not approved due to the high cost at that time. The SFPUC is in the process of updating the 1996 Recycled Water Master Plan (RWMP). The Draft 2005 RWMP will form the basis for developing new recycled water project alternatives, and updating the plan for implementation of recycled water projects in the City. These projects will help the City meet its long-term water demands in a more reliable and sustainable manner, as shown in Table 17.

Table 17 Recycled Water Benefits to San Francisco		
City's Needs	Recycled Water Benefits	
Improved Water Supply Reliability	Provides a new water source that is reliable ("drought-resistant") and locally controlled. Frees up potable water, currently used for landscape irrigation and other purposes, for strictly potable uses. Frees up local groundwater, currently used for landscape irrigation and other purposes, for other beneficial uses. Reduces reliance on imported water for irrigation and other purposes.	
Improved Water Supply Sustainability	Promotes efficient use of water resources by supplying nonpotable water demand with recycled water. Reduces level of rationing during drought periods, thereby benefiting the entire community. Reduces treated wastewater discharges into the Pacific Ocean and the Bay. Sustains landscape value during droughts when potable water use may be restricted. Provides a water source for recreational impoundments. Upholds state regulations mandating or encouraging the use of recycled water.	

²⁷ San Francisco Public Works Code, Article 22, Sections 1200-1210. Note that this Ordinance was amended in 1994 by Ordinance 393-94, which expanded the designated recycled water use area to include Treasure Island, Yerba Buena Island, and Hunters Point Shiovard.

10.2.2 Potential Uses of Recycled Water

One of the objectives of the Draft 2005 RWMP is to re-assess the recycled water use opportunities identified in the 1996 RWMP. This provides a basis for defining and evaluating potential recycled water project alternatives, and identifying additional opportunities that the City could pursue in the long-term. Potential recycled water uses in the City were identified for all allowable recycled water uses, except for a few including agricultural uses (not applicable in San Francisco). With the results of these efforts, a list was created of potential recycled water users, including San Francisco's major urban irrigation areas (parks, golf courses and schools), commercial centers and industrial users. Given the potential recycled water users identified, several key stakeholders were identified and involved in the development of the Draft 2005 RWMP, such as staff from the Recreation and Park Department, Department of Public Works, City Planning, and SFPUC Wastewater Enterprise staff.

10.2.3 Potential San Francisco Recycled Water Projects

The current Draft 2005 RWMP has initially identified a potential Phase 1 project that includes the four project alternatives described below. At this time, the Draft 2005 RWMP is recommending that design and development of Alternatives 1 and 2 proceed, while more analysis is done on the costs and feasibility of Alternatives 3 and 4.

- Project Alternative1/Westside Baseline Project would produce recycled water primarily for irrigation use on the Westside of the City, in areas such as Golden Gate Park.
- Project Alternative 2/Harding Park & Lake Merced Project would involve using recycled water for irrigation of the Harding Park/Fleming Golf Course, and recharge of Lake Merced; treatment for recycled water used for this alternative might require advanced tertiary treatment for nutrient removal to prevent eutrophication of Lake Merced.
- Project Alternative 3/Expanded Westside Baseline Project would serve smaller users located
 off of the "backbone" pipeline included in the Westside Baseline Project;
- Project Alternative 4/Marina Corridor Project would serve users along the Marina Corridor (such as the Marina Green and Fort Mason), and would involve a partnership with The Presidio Trust.

These four project alternatives were developed at the "facility-plan" level necessary to prepare separate environmental review documents. Refinement of the project alternatives at the facility-plan level involved the following:

- Identification of targeted users and their associated demands, potable water savings, and major implementation issues
- · Development of treatment, storage/pumping, and distribution facilities to serve identified users
- Estimate of costs for construction, and operation and maintenance
- · Quantification of project benefits, such as potential potable water and groundwater savings
- · Identification of potential implementation issues and actions to address those issues

10.2.4 Regional Recycled Water Partnerships

The SFPUC is working with local agencies to develop recycled water projects that will benefit the SFPUC and local partners. Examples of these projects are described below:

Pacifica Recycled Water Project

The SFPUC is partnering with the North Coast County Water District (NCCWD) on a recycled water project to irrigate areas in the City of Pacifica, including the Sharp Park Golf Course (owned and operated by the City). Recycled water will be produced at the City of Pacifica's Calera Creek Water Recycling Plant. The NCCWD is serving as the lead agency on this project.

South San Francisco/San Bruno Recycled Water Project

The SFPUC is partnering with the cities of South San Francisco, San Bruno, and Cal Water Service Company (South SF) to conduct a recycled water feasibility study. This study will evaluate the use of recycled water to reduce both potable water and groundwater use. It is proposed that recycled water for the project will be produced at the South San Francisco/San Bruno Water Quality Control Plant jointly operated by the cities of South San Francisco and San Bruno. The City of South San Francisco is serving as the lead agency on this project.

10.2.5 Participation in Regional Recycled Water Planning Efforts

The SFPUC is involved in the Bay Area Regional Water Recycling Program (BARWRP) as part of its retail efforts to develop its Recycled Water Program. BARWRP is a partnership of San Francisco Bay Area water and wastewater agencies that joined together with state and federal agencies to study the feasibility of using high-quality recycled water to augment supplies and help the Bay-Delta ecosystem. In December 1999, BARWRP produced a Recycled Water Master Plan for regional water recycling that identifies demands and provides a plan to achieve 125,000 AF/yr of recycled water in the Bay Area within the next 10 years.

The SFPUC is also a member of the newly created Bay Area Clean Water Agencies (BACWA), Recycled Water Committee. BAWCA is comprised of Bay Area wastewater agencies that discharge into The San Francisco Bay Estuary. The purpose of the Committee is to further regional water recycling efforts from a wastewater agency perspective. The SFPUC is currently serving as the Chair of this committee.

The City is an active member in the National, California Section, and the Northern California Chapter of the WateReuse Association. The National organization is dedicated to increasing the amount of recycled water produced, and used in a beneficial and efficient manner in the United States. The California Chapter focuses on promoting this mission in California.

10.3 Encouraging Recycled Water Use

10.3.1 Proposed Actions to Encourage Use of Recycled Water

To encourage the use of recycled water in San Francisco, San Francisco adopted Ordinances 390-91 and 391-9128. As mentioned previously, these ordinances require within a geographic area dual plumbing for the following:

- New or remodeled buildings and all subdivisions (with exception of condominium conversions) with a total of 40,000 square feet, or greater, to install dual plumbing for purposes such as irrigation, toilet flushing, and industrial processes
- New and existing landscaped areas 10,000 square feet or larger, to install dual plumbing for irrigation.

San Francisco also passed Ordinance 175-9129 which requires the use of non-potable water for soil compaction and dust control during construction and demolition projects.

10.3.2 Marketing and Financing Strategy

The Draft RWMP is proposing that recycled water projects be structured in phases, and includes proposed Phase 1 projects. As with all municipal projects, funding is limited, and the phased approach allows flexibility in constructing and implementing these projects. There are funds available to begin implementation of recycled water projects in the City. In 2002, San Francisco voters approved a \$1.6 billion revenue bond to fund renovations of the SFPUC's water delivery system. The WSIP was developed in 2003 to implement capital projects authorized under the bond measure and includes approximately \$180 million for recycled water projects that will benefit San Francisco.

Additionally, San Francisco is currently proceeding with the evaluation of other financial options to implement additional recycled water projects. San Francisco has applied for Proposition 50 funds (Chapter 8) from the State Water Resources Control Board, and will pursue other grant opportunities as they become available.

10.3.3 Economic Considerations

The estimated capital cost for the Proposed Phase 1 projects (Westside Baseline Project and the Harding Park/Lake Merced Project) described in the Draft RWMP is \$126 million (2005 cost). The costs are based on planning-level estimates (approximately + 30%). The total annual cost for operations and maintenance was estimated to be \$2.6 million per year with an annual recycled water delivery of 4.510 AFA. It has been assumed that various project beneficiaries would likely repay costs of these multi-purpose recycled water use projects.

²⁸ San Francisco Public Works Code, Article 22, Sections 1200-1210. Note that this Ordinance was amended in 1994 by Ordinance 393-94, which expanded the designated recycled water use area to include Treasure Island, Yerba Buena Island, and Hunters Point Shipyard.

San Francisco Public Works Code, Article 21, Sections 1100-1107.

10.4 Recycled Water Optimization Plan

As mentioned above, the San Francisco Board of Supervisors passed *Ordinances 390-91* and 391-91 that require installation of dual plumbing in buildings and subdivisions within a specific geographic area under the following conditions:

- New or remodeled buildings and all subdivisions (with exception of condominium conversions) with a total of 40,000 square feet, or greater, to install dual plumbing for purposes such as irrigation, toilet flushing, and industrial processes
- New and existing landscaped areas 10,000 square feet or larger, to install dual plumbing for irrigation.

Also, as discussed previously in this section, the 2005 Draft RWMP currently being prepared will develop recycled water project alternatives and provide a plan for implementation of recycled water projects in the City.





Appendix A

California Urban Water Management Planning Act of 1983 (Last revised: 2004) San Francisco 2005 Draft Urban Water Management Plan

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Established: AB 797, Klehs, 1983 Amended: AB 2661, Klehs, 1990 AB 11X, Filante, 1991 AB 1869, Speier, 1991 AB 892, Frazee, 1993 SB 1017, McCorquodale, 1994 AB 2853, Cortese, 1994 AB 1845, Cortese, 1995 SB 1011, Polanco, 1995 AB 2552, Bates, 2000 SB 553, Kelley, 2000 SB 610, Costa, 2001 AB 901, Daucher, 2001 SB 672, Machado, 2001 SB 1348, Brulte, 2002 SB 1384, Costa, 2002 SB 1518, Torlakson, 2002 AB 105, Wiggins, 2004 SB 318, Alpert, 2004

CALIFORNIA WATER CODE DIVISION 6 PART 2.6. URBAN WATER MANAGEMENT PLANNING

CHAPTER 1. GENERAL DECLARATION AND POLICY

10610. This part shall be known and may be cited as the "Urban Water Management Planning Act."

10610.2. (a) The Legislature finds and declares all of the following:

- The waters of the state are a limited and renewable resource subject to ever-increasing demands.
- (2) The conservation and efficient use of urban water supplies are of statewide concern; however, the planning for that use and the implementation of those plans can best be accomplished at the local level.
- (3) A long-term, reliable supply of water is essential to protect the productivity of California's businesses and economic climate.
- (4) As part of its long-range planning activities, every urban water supplier should make every effort to ensure the appropriate level of reliability in

- its water service sufficient to meet the needs of its various categories of customers during normal, dry, and multiple dry water years.
- (5) Public health issues have been raised over a number of contaminants that have been identified in certain local and imported water supplies.
- (6) Implementing effective water management strategies, including groundwater storage projects and recycled water projects, may require specific water quality and salinity targets for meeting groundwater basins water quality objectives and promoting beneficial use of recycled water.
- (7) Water quality regulations are becoming an increasingly important factor in water agencies' selection of raw water sources, treatment alternatives, and modifications to existing treatment facilities.
- (8) Changes in drinking water quality standards may also impact the usefulness of water supplies and may ultimately impact supply reliability.
- (9) The quality of source supplies can have a significant impact on water management strategies and supply reliability.
- (b) This part is intended to provide assistance to water agencies in carrying out their long-term resource planning responsibilities to ensure adequate water supplies to meet existing and future demands for water.
- 10610.4. The Legislature finds and declares that it is the policy of the state as follows:
 - (a) The management of urban water demands and efficient use of water shall be actively pursued to protect both the people of the state and their water resources.
 - (b) The management of urban water demands and efficient use of urban water supplies shall be a guiding criterion in public decisions.
 - (c) Urban water suppliers shall be required to develop water management plans to actively pursue the efficient use of available supplies.

CHAPTER 2. DEFINITIONS

10611. Unless the context otherwise requires, the definitions of this chapter govern the construction of this part.

- 10611.5. "Demand management" means those water conservation measures, programs, and incentives that prevent the waste of water and promote the reasonable and efficient use and reuse of available supplies.
- 10612. "Customer" means a purchaser of water from a water supplier who uses the water for municipal purposes, including residential, commercial, governmental, and industrial uses.
- 10613. "Efficient use" means those management measures that result in the most effective use of water so as to prevent its waste or unreasonable use or unreasonable method of use.
- 10614. "Person" means any individual, firm, association, organization, partnership, business, trust, corporation, company, public agency, or any agency of such an entity.
- 10615. "Plan" means an urban water management plan prepared pursuant to this part. A plan shall describe and evaluate sources of supply, reasonable and practical efficient uses, reclamation and demand management activities. The components of the plan may vary according to an individual community or area's characteristics and its capabilities to efficiently use and conserve water. The plan shall address measures for residential, commercial, governmental, and industrial water demand management as set forth in Article 2 (commencing with Section 10630) of Chapter 3. In addition, a strategy and time schedule for implementation shall be included in the plan.
- 10616. "Public agency" means any board, commission, county, city and county, city, regional agency, district, or other public entity.
- 10616.5. "Recycled water" means the reclamation and reuse of wastewater for beneficial use.
- 10617. "Urban water supplier" means a supplier, either publicly or privately owned, providing water for municipal purposes either directly or indirectly to more than 3,000 customers or supplying more than 3,000 acre-feet of water annually. An urban water supplier includes a supplier or contractor for water, regardless of the basis of right, which distributes or sells for ultimate resale to customers. This part applies only to water supplied from public water systems subject to Chapter 4 (commencing with Section 116275) of Part 12 of Division 104 of the Health and Safety Code.

CHAPTER 3. URBAN WATER MANAGEMENT PLANS Article 1. General Provisions

10620.

 Every urban water supplier shall prepare and adopt an urban water management plan in the manner set forth in Article 3 (commencing with Section 10640).

- (b) Every person that becomes an urban water supplier shall adopt an urban water management plan within one year after it has become an urban water supplier.
- (c) An urban water supplier indirectly providing water shall not include planning elements in its water management plan as provided in Article 2 (commencing with Section 10630) that would be applicable to urban water suppliers or public agencies directly providing water, or to their customers, without the consent of those suppliers or public agencies.

(d)

- (1) An urban water supplier may satisfy the requirements of this part by participation in areawide, regional, watershed, or basinwide urban water management planning where those plans will reduce preparation costs and contribute to the achievement of conservation and efficient water use.
- (2) Each urban water supplier shall coordinate the preparation of its plan with other appropriate agencies in the area, including other water suppliers that share a common source, water management agencies, and relevant public agencies, to the extent practicable.
- (e) The urban water supplier may prepare the plan with its own staff, by contract, or in cooperation with other governmental agencies.
- (f) An urban water supplier shall describe in the plan water management tools and options used by that entity that will maximize resources and minimize the need to import water from other regions.

10621.

- (a) Each urban water supplier shall update its plan at least once every five years on or before December 31, in years ending in five and zero.
- (b) Every urban water supplier required to prepare a plan pursuant to this part shall notify any city or county within which the supplier provides water supplies that the urban water supplier will be reviewing the plan and considering amendments or changes to the plan. The urban water supplier may consult with, and obtain comments from, any city or county that receives notice pursuant to this subdivision.
- (c) The amendments to, or changes in, the plan shall be adopted and filed in the manner set forth in Article 3 (commencing with Section 10640).

Article 2. Contents of Plans

10630. It is the intention of the Legislature, in enacting this part, to permit levels of water management planning commensurate with the numbers of customers served and the volume of water supplied.

10631. A plan shall be adopted in accordance with this chapter and shall do all of the following:

- (a) Describe the service area of the supplier, including current and projected population, climate, and other demographic factors affecting the supplier's water management planning. The projected population estimates shall be based upon data from the state, regional, or local service agency population projections within the service area of the urban water supplier and shall be in five-year increments to 20 years or as far as data is available.
- (b) Identify and quantify, to the extent practicable, the existing and planned sources of water available to the supplier over the same five-year increments described in subdivision (a). If groundwater is identified as an existing or planned source of water available to the supplier, all of the following information shall be included in the plan:
 - A copy of any groundwater management plan adopted by the urban water supplier, including plans adopted pursuant to Part 2.75 (commencing with Section 10750), or any other specific authorization for groundwater management.
 - (2) A description of any groundwater basin or basins from which the urban water supplier pumps groundwater. For those basins for which a court or the board has adjudicated the rights to pump groundwater, a copy of the order or decree adopted by the court or the board and a description of the amount of groundwater the urban water supplier has the legal right to pump under the order or decree.

For basins that have not been adjudicated, information as to whether the department has identified the basin or basins as overdrafted or has projected that the basin will become overdrafted if present management conditions continue, in the most current official departmental bulletin that characterizes the condition of the groundwater basin, and a detailed description of the efforts being undertaken by the urban water supplier to eliminate the long-term overdraft condition.

(3) A detailed description and analysis of the location, amount, and sufficiency of groundwater pumped by the urban water supplier for the past five years. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records

- (4) A detailed description and analysis of the amount and location of groundwater that is projected to be pumped by the urban water supplier. The description and analysis shall be based on information that is reasonably available, including, but not limited to, historic use records.
- (c) Describe the reliability of the water supply and vulnerability to seasonal or climatic shortage, to the extent practicable, and provide data for each of the following:
 - (1) An average water year.
 - (2) A single dry water year.
 - (3) Multiple dry water years.

For any water source that may not be available at a consistent level of use, given specific legal, environmental, water quality, or climatic factors, describe plans to supplement or replace that source with alternative sources or water demand management measures, to the extent practicable.

 (d) Describe the opportunities for exchanges or transfers of water on a shortterm or long-term basis.

(e)

- (1) Quantify, to the extent records are available, past and current water use, over the same five-year increments described in subdivision (a), and projected water use, identifying the uses among water use sectors including, but not necessarily limited to, all of the following uses:
 - (A) Single-family residential.
 - (B) Multifamily.
 - (C) Commercial.
 - (D) Industrial.
 - (E) Institutional and governmental.
 - (F) Landscape.
 - (G) Sales to other agencies.
 - (H) Saline water intrusion barriers, groundwater recharge, or conjunctive use, or any combination thereof.
 - (I) Agricultural.
- (2) The water use projections shall be in the same five-year increments described in subdivision (a).

- (f) Provide a description of the supplier's water demand management measures. This description shall include all of the following:
 - A description of each water demand management measure that is currently being implemented, or scheduled for implementation, including the steps necessary to implement any proposed measures, including, but not limited to, all of the following:
 - (A) Water survey programs for single-family residential and multifamily residential customers.
 - (B) Residential plumbing retrofit.
 - (C) System water audits, leak detection, and repair.
 - (D) Metering with commodity rates for all new connections and retrofit of existing connections.
 - (E) Large landscape conservation programs and incentives.
 - (F) High-efficiency washing machine rebate programs.
 - (G) Public information programs.
 - (H) School education programs.
 - (I) Conservation programs for commercial, industrial, and institutional accounts.
 - (J) Wholesale agency programs.
 - (K) Conservation pricing.
 - (L) Water conservation coordinator.
 - (M) Water waste prohibition.
 - (N) Residential ultra-low-flush toilet replacement programs.
 - (2) A schedule of implementation for all water demand management measures proposed or described in the plan.
 - (3) A description of the methods, if any, that the supplier will use to evaluate the effectiveness of water demand management measures implemented or described under the plan.

- (4) An estimate, if available, of existing conservation savings on water use within the supplier's service area, and the effect of the savings on the supplier's ability to further reduce demand.
- (g) An evaluation of each water demand management measure listed in paragraph (1) of subdivision (f) that is not currently being implemented or scheduled for implementation. In the course of the evaluation, first consideration shall be given to water demand management measures, or combination of measures, that offer lower incremental costs than expanded or additional water supplies. This evaluation shall do all of the following:
 - Take into account economic and noneconomic factors, including environmental, social, health, customer impact, and technological factors
 - Include a cost-benefit analysis, identifying total benefits and total costs.
 - (3) Include a description of funding available to implement any planned water supply project that would provide water at a higher unit cost.
 - (4) Include a description of the water supplier's legal authority to implement the measure and efforts to work with other relevant agencies to ensure the implementation of the measure and to share the cost of implementation.
- (h) Include a description of all water supply projects and water supply programs that may be undertaken by the urban water supplier to meet the total projected water use as established pursuant to subdivision (a) of Section 10635. The urban water supplier shall include a detailed description of expected future projects and programs, other than the demand management programs identified pursuant to paragraph (1) of subdivision (f), that the urban water supplier may implement to increase the amount of the water supply available to the urban water supplier in average, single-dry, and multiple-dry water years. The description shall identify specific projects and include a description of the increase in water supply that is expected to be available from each project. The description shall include an estimate with regard to the implementation timeline for each project or program.
- Describe the opportunities for development of desalinated water, including, but not limited to, ocean water, brackish water, and groundwater, as a long-term supply.
- (j) Urban water suppliers that are members of the California Urban
 Water Conservation Council and submit annual reports to that council

- in accordance with the "Memorandum of Understanding Regarding Urban Water Conservation in California," dated September 1991, may submit the annual reports identifying water demand management measures currently being implemented, or scheduled for implementation, to satisfy the requirements of subdivisions (f) and (g).
- (k) Urban water suppliers that rely upon a wholesale agency for a source of water, shall provide the wholesale agency with water use projections from that agency for that source of water in five-year increments to 20 years or as far as data is available. The wholesale agency shall provide information to the urban water supplier for inclusion in the urban water supplier's plan that identifies and quantifies, to the extent practicable, the existing and planned sources of water as required by subdivision (b), available from the wholesale agency to the urban water supplier over the same five-year increments, and during various water-year types in accordance with subdivision (c). An urban water supplier may rely upon water supply information provided by the wholesale agency in fulfilling the plan informational requirements of subdivisions (b) and (c), including, but not limited to, ocean water, brackish water, and groundwater, as a long-term supply.
- 10631.5. The department shall take into consideration whether the urban water supplier is implementing or scheduled for implementation, the water demand management activities that the urban water supplier identified in its urban water management plan, pursuant to Section 10631, in evaluating applications for grants and loans made available pursuant to Section 79163. The urban water supplier may submit to the department copies of its annual reports and other relevant documents to assist the department in determining whether the urban water supplier is implementing or scheduling the implementation of water demand management activities.
- 10632. The plan shall provide an urban water shortage contingency analysis which includes each of the following elements which are within the authority of the urban water supplier:
 - (a) Stages of action to be undertaken by the urban water supplier in response to water supply shortages, including up to a 50 percent reduction in water supply, and an outline of specific water supply conditions which are applicable to each stage.
 - (b) An estimate of the minimum water supply available during each of the next three water years based on the driest three-year historic sequence for the agency's water supply.
 - (c) Actions to be undertaken by the urban water supplier to prepare for, and implement during, a catastrophic interruption of water supplies including,

but not limited to, a regional power outage, an earthquake, or other disaster.

- (d) Additional, mandatory prohibitions against specific water use practices during water shortages, including, but not limited to, prohibiting the use of potable water for street cleaning.
- (e) Consumption reduction methods in the most restrictive stages. Each urban water supplier may use any type of consumption reduction methods in its water shortage contingency analysis that would reduce water use, are appropriate for its area, and have the ability to achieve a water use reduction consistent with up to a 50 percent reduction in water supply.
- (f) Penalties or charges for excessive use, where applicable.
- (g) An analysis of the impacts of each of the actions and conditions described in subdivisions (a) to (f), inclusive, on the revenues and expenditures of the urban water supplier, and proposed measures to overcome those impacts, such as the development of reserves and rate adjustments.
- (h) A draft water shortage contingency resolution or ordinance.
- A mechanism for determining actual reductions in water use pursuant to the urban water shortage contingency analysis.

10633. The plan shall provide, to the extent available, information on recycled water and its potential for use as a water source in the service area of the urban water supplier. The preparation of the plan shall be coordinated with local water, wastewater, groundwater, and planning agencies that operate within the supplier's service area, and shall include all of the following:

- (a) A description of the wastewater collection and treatment systems in the supplier's service area, including a quantification of the amount of wastewater collected and treated and the methods of wastewater disposal.
- (b) A description of the quantity of treated wastewater that meets recycled water standards, is being discharged, and is otherwise available for use in a recycled water project.
- (c) A description of the recycled water currently being used in the supplier's service area, including, but not limited to, the type, place, and quantity of use.

- (d) A description and quantification of the potential uses of recycled water, including, but not limited to, agricultural irrigation, landscape irrigation, wildlife habitat enhancement, wetlands, industrial reuse, groundwater recharge, and other appropriate uses, and a determination with regard to the technical and economic feasibility of serving those uses.
- (e) The projected use of recycled water within the supplier's service area at the end of 5, 10, 15, and 20 years, and a description of the actual use of recycled water in comparison to uses previously projected pursuant to this subdivision.
- (f) A description of actions, including financial incentives, which may be taken to encourage the use of recycled water, and the projected results of these actions in terms of acre-feet of recycled water used per year.
- (g) A plan for optimizing the use of recycled water in the supplier's service area, including actions to facilitate the installation of dual distribution systems, to promote recirculating uses, to facilitate the increased use of treated wastewater that meets recycled water standards, and to overcome any obstacles to achieving that increased use.

10634. The plan shall include information, to the extent practicable, relating to the quality of existing sources of water available to the supplier over the same five-year increments as described in subdivision (a) of Section 10631, and the manner in which water quality affects water management strategies and supply reliability.

Article 2.5 Water Service Reliability

10635.

(a) Every urban water supplier shall include, as part of its urban water management plan, an assessment of the reliability of its water service to its customers during normal, dry, and multiple dry water years. This water supply and demand assessment shall compare the total water supply sources available to the water supplier with the total projected water use over the next 20 years, in five-year increments, for a normal water year, a single dry water year, and multiple dry water years. The water service reliability assessment shall be based upon the information compiled pursuant to Section 10631, including available data from state, regional, or local agency population projections within the service area of the urban water supplier.

- (b) The urban water supplier shall provide that portion of its urban water management plan prepared pursuant to this article to any city or county within which it provides water supplies no later than 60 days after the submission of its urban water management plan.
- (c) Nothing in this article is intended to create a right or entitlement to water service or any specific level of water service.
- (d) Nothing in this article is intended to change existing law concerning an urban water supplier's obligation to provide water service to its existing customers or to any potential future customers.

Articl 3. Adoption and Implementation of Plans

10640. Every urban water supplier required to prepare a plan pursuant to this part shall prepare its plan pursuant to Article 2 (commencing with Section 10630).

The supplier shall likewise periodically review the plan as required by Section 10621, and any amendments or changes required as a result of that review shall be adopted pursuant to this article.

10641. An urban water supplier required to prepare a plan may consult with, and obtain comments from, any public agency or state agency or any person who has special expertise with respect to water demand management methods and techniques.

10642. Each urban water supplier shall encourage the active involvement of diverse social, cultural, and economic elements of the population within the service area prior to and during the preparation of the plan. Prior to adopting a plan, the urban water supplier shall make the plan available for public inspection and shall hold a public hearing thereon. Prior to the hearing, notice of the time and place of hearing shall be published within the jurisdiction of the publicly owned water supplier pursuant to Section 6066 of the Government Code. The urban water supplier shall provide notice of the time and place of hearing to any city or county within which the supplier provides water supplies. A privately owned water supplier shall provide an equivalent notice within its service area. After the hearing, the plan shall be adopted as prepared or as modified after the hearing.

10643. An urban water supplier shall implement its plan adopted pursuant to this chapter in accordance with the schedule set forth in its plan.

10644

(a) An urban water supplier shall file with the department and any city or county within which the supplier provides water supplies a copy of its plan no later than 30 days after adoption. Copies of amendments or changes to the

- plans shall be filed with the department and any city or county within which the supplier provides water supplies within 30 days after adoption.
- (b) The department shall prepare and submit to the Legislature, on or before December 31, in the years ending in six and one, a report summarizing the status of the plans adopted pursuant to this part. The report prepared by the department shall identify the outstanding elements of the individual plans. The department shall provide a copy of the report to each urban water supplier that has filed its plan with the department. The department shall also prepare reports and provide data for any legislative hearings designed to consider the effectiveness of plans submitted pursuant to this part.

10645. Not later than 30 days after filing a copy of its plan with the department, the urban water supplier and the department shall make the plan available for public review during normal business hours.

CHAPTER 4 MISCELL ANEOUS PROVISIONS

10650. Any actions or proceedings to attack, review, set aside, void, or annul the acts or decisions of an urban water supplier on the grounds of noncompliance with this part shall be commenced as follows:

- (a) An action or proceeding alleging failure to adopt a plan shall be commenced within 18 months after that adoption is required by this part.
- (b) Any action or proceeding alleging that a plan, or action taken pursuant to the plan, does not comply with this part shall be commenced within 90 days after filing of the plan or amendment thereto pursuant to Section 10644 or the taking of that action.

10651. In any action or proceeding to attack, review, set aside, void, or annul a plan, or an action taken pursuant to the plan by an urban water supplier on the grounds of noncompliance with this part, the inquiry shall extend only to whether there was a prejudicial abuse of discretion. Abuse of discretion is established if the supplier has not proceeded in a manner required by law or if the action by the water supplier is not supported by substantial evidence.

10652. The California Environmental Quality Act (Division 13 (commencing with Section 21000) of the Public Resources Code) does not apply to the preparation and adoption of plans pursuant to this part or to the implementation of actions taken pursuant to Section 10632. Nothing in this part shall be interpreted as exempting from the California Environmental Quality Act any project that would significantly affect water supplies for fish and wildlife, or any project for implementation of the plan, other than projects implementing Section 10632, or any project for expanded or additional water supplies.

10653. The adoption of a plan shall satisfy any requirements of state law, regulation, or order, including those of the State Water Resources Control Board and the Public Utilities Commission, for the preparation of water management plans or conservation plans; provided, that if the State Water Resources Control Board or the Public Utilities Commission requires additional information concerning water conservation to implement its existing authority, nothing in this part shall be deemed to limit the board or the commission in obtaining that information. The requirements of this part shall be satisfied by any urban water demand management plan prepared to meet federal laws or regulations after the effective date of this part, and which substantially meets the requirements of this part, or by any existing urban water management plan which includes the contents of a plan required under this part.

10654. An urban water supplier may recover in its rates the costs incurred in preparing its plan and implementing the reasonable water conservation measures included in the plan. Any best water management practice that is included in the plan that is identified in the "Memorandum of Understanding Regarding Urban Water Conservation in California" is deemed to be reasonable for the purposes of this section.

10655. If any provision of this part or the application thereof to any person or circumstances is held invalid, that invalidity shall not affect other provisions or applications of this part which can be given effect without the invalid provision or application thereof, and to this end the provisions of this part are severable.

10656. An urban water supplier that does not prepare, adopt, and submit its urban water management plan to the department in accordance with this part, is ineligible to receive funding pursuant to Division 24 (commencing with Section 78500) or Division 26 (commencing with Section 79000), or receive drought assistance from the state until the urban water management plan is submitted pursuant to this article.

10657.

- (a) The department shall take into consideration whether the urban water supplier has submitted an updated urban water management plan that is consistent with Section 10631, as amended by the act that adds this section, in determining whether the urban water supplier is eligible for funds made available pursuant to any program administered by the department.
- (b) This section shall remain in effect only until January 1, 2006, and as of that date is repealed, unless a later enacted statute, that is enacted before January 1, 2006, deletes or extends that date.





Appendix B

Resolution to Adopt the 2005 Urban Water Management Plan Update

PUBLIC UTILITIES COMMISSION

City and County of San Francisco

RESOLUTION NO.	

WHEREAS, The Urban Water Management Planning Act of 1983, amended through 2004, requires that an urban water supplier serving 3,000 customers or 3,000 acre-feet per year must prepare an Urban Water Management Plan (Plan) update every five years beginning in 1985; and

WHEREAS, The SFPUC in compliance with this Act has prepared a 2005 update to its Plan; and

WHEREAS, The preparation of the Plan update has been coordinated with the City's wholesale water customers and other public agencies to the extent practicable, and staff has encouraged the active involvement of diverse social, cultural and economic elements of the population within the SFPUC's retail water service area during preparation of the Plan; now, therefore, be it

RESOLVED, That the Public Utilities Commission has reviewed and considered the 2005 Plan update, finds it to be in accordance with the requirements of the California Urban Water Management Planning Act, and hereby adopts the Plan; and be it

FURTHER RESOLVED, That this Public Utilities Commission hereby directs the General Manager to transmit the 2005 Plan update to State of California Department of Water Resources by December 31, 2005, and to the California State Library within 30 days of adoption.

I hereby certify that the foregoin	g resolution	was	adopted	by	the	Public	Utilities
Commission at its meeting of							

Secretary, Public Utilities Commission







Appendix C

Water Shortage Allocation Plans

- Retail Water Shortage Allocation Plan
- Interim Water Shortage Allocation Plan ("Tier One Plan")
- Interim Water Shortage Allocation Plan Among Suburban Customers ("Tier Two Plan")

San Francisco 2005 Draft Urban Water Management Plan

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RETAIL WATER SHORTAGE ALLOCATION PLAN

December 11, 2001

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I. Introduction

A. Purpose and Need for Retail Water Shortage Allocation Plan

The intent of the Retail Water Shortage Allocation Plan (Plan) is to provide the San Francisco Public Utilities Commission (SFPUC) with a guidance tool to be used for allocating water amongst the City and County San Francisco retail customers ("retail customers") in the event of a water shortage due to drought. Additionally, the Plan provides retail customers with a framework for understanding how the SFPUC intends to allocate water resources during times of water shortage due to drought. The expectation is that this Plan can help retail customers better anticipate how their individual water supply will be affected during a drought.

The need for this Plan has come about as a result of a series of actions and experiences including the SFPUC's adoption of the Interim Water Shortage Allocation Plan and the drought of 1987-1992. At the time of the 1987-1992 drought, the SFPUC, in the absence of a drought plan, reacted to the drought by adopting a short-term approach for allocating water resources amongst both retail and wholesale customers. This Plan in combination with the Interim Water Shortage Allocation Plan puts in place a long-term plan for responding to levels of water shortage due drought. The following sections describe these actions and experiences in more detail.

1. Interim Water Shortage Allocation Plan

In October 2000, the SFPUC adopted an Interim Water Shortage Allocation Plan (IWSAP) that provides a method and process by which the SFPUC intends to allocate water resources between its collective retail customers and wholesale customers during system-wide water shortages of up to 20 percent resulting from drought. The IWSAP was subsequently adopted by all 29 wholesale customers between October 2000 and June 2001 thereby officially activating the allocation method and process outlined in the IWASP.

The allocation method adopted in the IWSAP relies on a percentage decrease of inside and outside water use and provides a notification schedule for informing customers of an upcoming drought. The IWSAP also outlines a structure for water transfers between the retail and wholesale customers. Finally, the IWSAP identifies an enforcement process for ensuring that the allocations are adhered to through the application of excess use charges.

This Retail Plan is consistent with the IWSAP in its methodology, schedule and enforcement process.

2. Past Drought Experience

The SFPUC, along with the entire State of California, experienced a significant drought from 1987 to 1992. During this time the SFPUC experienced system-wide shortages of 25 to nearly 45 percent. In response to the drought, the SFPUC instituted mandatory rationing which required retail customers to reduce indoor and outdoor consumption based on specified allocations for those use types. As the drought progressed, SFPUC

retail customers were required to reduce total consumption by 14 percent, up to approximately 32 percent. If customers consumed beyond their allotted amount they were faced with excess use charges. For the most part, customers were able to reduce their indoor use through installation of water-conserving devices such as low-flow toilets, showerheads and faucet agrators.

The Customer Service Bureau of the SFPUC created a short-term rationing unit to implement the drought program. The rationing unit's primary responsibility was to enforce mandatory rationing and manage the allocation and appeal process. Throughout the drought, the rationing unit received 131,000 requests for modified allocations. In general, allocations were modified on the basis of increased occupancy, medical exemptions, allowances for past conservation, increased business, and other miscellaneous reasons. Modifications were based on a per capita allotment.

The rationing unit also performed audits on those customers who consumed water beyond their allocations. This was done in an effort to identify the presence of leaks or other system failures that resulted in excess use.

B. Long-term Conservation Programs and Existing Demand Reduction Policies/Ordinances

1. Long-term Conservation Programs

In 1986, prior to the 1987-1992 drought, the SFPUC established a long-term conservation program. A conservation administrator was hired to implement the program. The programs, at that time, included public information and education; a conservation device retrofit program; landscape water audit program; and a low-use landscaping program. During the drought the long-term conservation program continued.

In 1991, the SFPUC elevated its long-term conservation program when it became a signatory to the *Memorandum of Understanding Regarding Urban Water Conservation in California*. This MOU outlined water-conserving Best Management Practices (BMPs) that all signatories agreed to implement. Today's BMPs include:

- Interior and Exterior Water Audits and Incentive for Single Family Residential and Multi-family Residential Customers
- · Residential Plumbing Retrofit
- · System Water Audits, Leak Detection and Repair
- Metering with Commodity rates for all New Connections and Retrofit of Existing Connections
- · Large Landscape Conservation Programs and Incentives
- Horizontal Axis Washer Rebate Programs
- · Public Information
- · School Education Programs
- Commercial, Industrial and Institutional Water Conservation
- · Wholesale Agency Assistance Programs
- · Conservation Pricing
- · Conservation Coordinator
- · Water Waste Prohibition

Residential Ultra Low Flush Toilet Replacement Programs

Through the implementation of the long-term conservation program, the SFPUC retail residential customers have reduced their per capita per day (pcpd) demand by 12 gallons. That is, prior to the 1987-1992 drought per capita residential demand was at 73 gallons per capita per day (gpcpd) while current demand is at 61 gpcd. Approximately 95 percent of SFPUC retail customers have signed affidavits confirming that they have installed water-conserving devices in their homes to eliminate water waste. Such devices include low flush toilets, faucet aerators and low flow showerheads.

2. Existing Demand Reduction Policies/Ordinances

In addition to the long-term conservation programs in place, the SFPUC and Board of Supervisors have implemented several demand reduction policies and ordinances that encourage the reduction of potable water use. These policies and ordinances range from requiring installation of conservation devices at the time of residential resale to development of groundwater and recycled water sources. The following summarizes measures adopted through 2001.

Water Conservation Ordinances

Ordinance 392-90: Water Conservation Fixtures in New and Renovated Buildings ¹. This ordinance changed San Francisco plumbing codes to require all new buildings (and all buildings in which the water drainage system is substantially altered modified or renovated) to install/retrofit toilets and urinals with fixtures using no more than 1.6 gallons per flush and 1 gallon per flush, respectively.

Ordinance 185-91 and Ordinance 346-91: Plumbing Fixture Retrofit in Multi-family Residential Buildings and Single-Family Residential Buildings². Collectively these ordinances require water conservation device retrofits within multi-family and single-family residential buildings upon sale, transfer of title, or major improvement to a dwelling. The ordinance also required all applicable fixtures within multi-family residential units to be retrofitted within three years subsequent to the effective date of the ordinances (by the end of 1994).

Retrofit requirements include:

- Installation of Showerheads with a capacity not exceeding 2.5 gallons per minute;
- Installation of aerators attached to sinks and basins where possible; and
- Installation of flush reducers, flow restrictors, volume reducers, or toilets with a
 capacity not exceeding 3.5 gallons per flush.

Ordinance 359-91: Plumbing Fixture Retrofit of Commercial Buildings, including Tourist Hotels and Motels³. This ordinance required the same plumbing retrofit requirements for commercial buildings, including tourist hotels and motels as was required for single and multi-family residential buildings. Compliance of this ordinance was also required by 1994.

San Francisco Plumbing Code sections 905 and 1001.1

² San Francisco Housing Code, Chapter 12A, Section 12A01-12A14

³ San Francisco Building Code, Chapter 53B, Sections 53B01-53B15

Ordinance 92-91(as amended by Ordinance 192-00): Water Use for Landscaping in New Developments*. This ordinance requires particular water-conserving landscape strategies be employed for any new commercial, governmental or residential (two or more units) building on a lot exceeding 3,500 square feet or with a landscaping area of more than 1,000 square feet. The specific requirements of the ordinance include:

- Total area devoted to turf grass; decorative water use and water intensive planting must be limited to 15% of the parcel area. The limitation does not apply to children's play areas, public recreation areas or other such areas;
- Strips of turf less than 8 feet wide are prohibited;
- Water intensive plants must be grouped together and must be irrigated on a separate cycle from turf grass;
- Slopes exceeding 10% adjacent to the hardscape cannot consist of turf grass;
- All large areas must have separately metered irrigation systems;
- Valves and circuits shall be separated based on water use and must be set to operate between 5 p.m. and 10 a.m.; and
- A soil analysis must be done on the soil used for the landscape. A report specifying how the soil deficiencies will be meet must accompany the application for the meter.

Ordinance 148-99: Plumbing Retrofit of Municipal Buildings⁵. This ordinance requires all municipal buildings to replace their water-inefficient toilets with 1.6 gallons per flush toilets and showerheads with 1.5 gallons per minute showerheads by June 6, 2005.

Recycled Water Ordinances

Ordinances 390-91 and 391-91(as amended by Ordinance 393-94): Mandatory Use of Reclaimed Water⁶. These ordinances require the development of a Recycled Water Master Plan including the designation of recycled (or reclaimed) water use areas within San Francisco and requires the installation of dual plumbing systems within the recycled water use areas for the following situations:

- New or remodeled buildings and all subdivisions (except condominium conversions) with a total area of 40,000 square feet or more; and
- · New and existing irrigated areas of 1,000 square feet or more.

Ordinance 175-91: Mandatory Use of Non-Potable Water for Soil Compaction and Dust Control⁷. This ordinance requires the use of non-potable water for soil compaction and dust control during construction and demolition projects.

⁴ San Francisco Administrative Code, Chapter 63, 63-63.11

San Francisco Administrative Code, Chapter 82, Section 4.

San Francisco Public Works Code, Article 22, Sections 1200-1210

⁷ San Francisco Public Works Code, Article 21, Sections 1100-1107

Water Waste Prohibitions

The Customer Service Bureau currently enforces several water waste prohibitions through a complaint/inspection process. The following prohibitions are subject to that process:

- Water waste, including but not limited to, any flooding or runoff into the street or gutters is prohibited;
- Hoses used for any purpose must have positive shut-off valves;
- · Restaurants shall serve water to customers only upon request; and
- Water used for all cooling purposes and commercial car washes must be recycled.

3. Relationship between Future Demand Reductions and Existing Long-term Conservation Programs

The SFPUC retail customers are facing a hardened demand as a result of long-term conservation programs and installation of water-conserving devices during the 1987-92 drought. As a result of these factors, residential demand has been reduced by 12 gallons per capita per day (gpcpd) since pre-drought demand levels. In addition, approximately 95 percent of residential customers have signed affidavits attesting to the fact that they have installed low-flush toilets, faucet aerators and low-flow showerheads. Furthermore, the SFPUC's consistent implementation of BMPs for water conservation, as identified above, has resulted in hardened demand for commercial, industrial and institutional customers.

This hardened demand means that reducing demand during future droughts will be challenging. As mentioned previously, during the 1987-92 drought there was an opportunity to reduce demand by installing low-flush toilets, faucet aerators and low-flow showerheads. That opportunity has been significantly reduced. This means that during the next drought demand reduction will most likely come from changing the frequency in which water-consuming devices are used. For example, reducing the number of times the toilet is flushed or running the washing machine less frequently.

Despite the challenge, there is a need for the SFPUC to adopt a plan to be implemented during droughts that will result in reducing water delivery from the SFPUC reservoir system. This includes adopting a water shortage allocation plan, the principal objective of this Retail Plan.

C. Components of the Plan

The Retail Plan consists of two primary sections: (1) Declaring a water shortage and (2) Allocation method and process. The former section describes the process for identifying and declaring a water shortage due to drought. The latter section describes the process of allocating water amongst retail customers during a drought, the process of appealing those allocations and enforcement of allocations.

II. Process for Declaring Shortage

A. Timing and Assessment of Water System Conditions

The SFPUC water supply system relies on precipitation and snowmelt stored in its reservoirs from one year to the next. It is this "carry-over" storage that the SFPUC relies on to be able to meet wholesale and retail demand. Because of the importance of "carryover" storage, the water supply condition of the SFPUC system is constantly monitored and evaluated. Look-ahead forecasts are updated as a year's hydrology and operations change. Generally in early winter of any year, SFPUC staff can begin providing a forecast of water supply conditions for the upcoming year based on known and anticipated winter and spring precipitation and snowpack. The annual precipitation, snowmelt, and "carry-over" storage together constitute the SFPUC's reservoir storage condition. Using data for each of these factors, SFPUC staff is able to determine whether the reservoir system will be capable of serving full deliveries to the SFPUC customers.

Consistent with the Interim Water Shortage Allocation Plan, if the SFPUC reservoir system appears incapable of meeting system-wide demand due to drought, the SFPUC is expected to declare a water shortage by March 31 of that drought year. The General Manager, or designee, is responsible for declaring such a shortage.

Delivery Reduction Levels

To aid in balancing the SFPUC supplies with demands during drought, the SFPUC has developed a general protocol that links anticipated total8 reservoir storage conditions to suggested delivery reductions. The SFPUC total reservoir system has the capacity to store up to 1,627,000 acre-feet. In relation to this storage capacity and a current systemwide demand of 260 million gallons per day (mgd), when it appears the total system storage will not reach above approximately 1,000,000 acre-feet at the end of the springsummer snowmelt, the SFPUC may begin to evaluate whether the reservoir system will be capable of serving full deliveries to its customers.9 If the reservoir system is determined incapable of serving full deliveries to SFPUC customers, the SFPUC may impose a level of delivery reduction. As anticipated reservoir storage becomes more depleted during drought, a greater level of delivery reduction may be required. There are three stages of water delivery reduction that correspond to the SFPUC protocol. The three stages are:

Stage 1 - requires system-wide demand reduction of 5 to 10 percent. This stage results in a voluntary rationing request of customers. At this stage, it is likely that retail water customers will be alerted to the status of water supply conditions and reminded of water use prohibitions as well as informed of any incentives and programs available to reduce water demand (i.e. acceleration of long-term conservation programs such as toilet rebate programs, leak detection audits, and the like)

^{5 &}quot;total reservoir storage" includes all system reservoirs (Lloyd, Eleanor, Hetch Hetchy, San Anotonio, Calaveras, Crystal Springs, Pilarcitos, and San Andreas) and the water bank at New Don Pedro Reservoir. This reduction point is subject to change as total system-wide demand increases over time.

- (2) Stage 2 requires system-wide demand reduction of 11 to 20 percent. This stage results in mandatory rationing programs. In addition to implementing Stage 1 actions, all customers will receive an allocation of water. Any use beyond that allocation will become subject to excess use charges, installation of flow restrictor devices or shut-off of water. The latter two consequences may also be imposed if water waste prohibitions are violated.
- (3) Stage 3 requires system-wide demand reduction of 20 percent or greater. This stage results in mandatory rationing programs and results in the same actions identified under Stage 2 with further reduced allocations.

C. Initiation of Delivery Reduction Program

Prior to the initiation of any of water delivery reductions, whether it be initial implementation of reduced delivery or increasing the severity of water shortage, the SFPUC will outline the water supply situation, proposed water use reduction objectives, alternatives to water use reductions, methods to calculate water use allocations and adjustments, compliance methodology and enforcement measures, and budget considerations at a regularly scheduled Commission meeting for public input. The meeting will be advertised and the public will be invited to comment on the SFPUC's intent to reduce deliveries in accordance with the requirements of California Water Code Section 6066 of the Government Code.

Revenue and Expenditure Impacts During Water Shortages. The SFPUC uses a uniform volume charge. As a result, as sales decrease revenues are lost on a per unit basis. Because the marginal cost of water production is miniscule, as production is reduced the cost of service remains the same. Therefore, during a water shortage, as occurred during the 1987-92 drought, the SFPUC may need to raise water rates to make up for lost revenue due to less water use. The SFPUC retail rates, however, are frozen until 2006 due to Proposition H. As a result, retail rates cannot be adjusted to make up for revenue shortfalls unless voters repeal the Proposition or the Mayor declares an emergency as provided for in the City's Charter. The SFPUC does maintain an unappropriated fund balance that can be used to offset the effects of revenue shortfall. Budget considerations will be discussed at the time a drought is declared and revisited as the drought progresses.

III. Allocation Method and Process

A. Types of Allocation Methods

In the event of a mandatory rationing program, the SFPUC must adopt a system for allocating water amongst its retail customers. During the 1987-1992 drought four allocation methods were considered. They were the inside/outside or seasonal allocation method, the per capita allocation method, the uniform allocation method, and the percentage allocation method. The following provides of a description of each method and potential advantages or disadvantages of applying each method.

Inside/Outside allocation method. The Inside/Outside method, also referred to as seasonal method, applies a percent reduction to both indoor and outdoor use. To determine an individual's allocation, a base year is used and reductions are made to both inside and outside usage. Winter usage is identified as typically reflecting inside use. The average of the winter months (November, December, January, February) of the base year is used as the baseline for determining inside use for all 12 months. Usage in excess of the baseline is considered outside use. The monthly or bi-monthly inside/outside allocation is a composite of the inside use and the outside use reduced by their respective percentages. This method distributes water equitably and has been proven effective in achieving prior system-wide consumption goals. However, because this method reduces water allocations for all customers regardless of their current use, there is concern that water users consuming very low amounts of water will be affected disproportionately.

Per capita allocation method. The per capita allocation method applies a fixed amount of daily water for each resident. The allocation method requires that each residential occupant receives a fixed daily amount of water. To implement this method a census of the service area is required. Conducting a census is highly time consuming and the response to the survey is often statistically low and inaccurate. The method does not allow for differences in dwelling type, existing landscaping needs or special individual circumstances. A per capita allocation would prove unworkable with commercial and industrial customers and would require a different method for determining allocations.

Uniform allocation method. The uniform allocation method applies a fixed daily amount per dwelling unit for all residential customers. This method does not distribute water equitably to all customers, especially since it does not take into considerations the number of individuals living in the dwelling unit. As in the per capita plan, this method would prove unworkable for commercial and industrial customers.

Percentage allocation method. The method requires water allocation to be based on a straight percent reduction of past use. As an example to achieve a specified reduction goal, all customers would be allotted a percentage of the amount used in each billing period in the base year. The method requires a much greater reduction in inside use and could cause hardship on residential and commercial customers.

B. Preferred Allocation Method: Inside/Outside Method

During the 1987-92 drought the Inside/Outside method was implemented because it was found to be the most fair and reasonable method amongst the alternatives. At that time for those customers that appealed their allocations a per capita allocation was applied to the account.¹⁰

The Inside/Outside method will be applied to allocating water amongst retail customers during a water shortage due to drought. The allocation method will be applied to all accounts using more than 3 units of water per two-month billing period. A percentage reduction of inside and outside use will be applied to all accounts using more than 3 units of water during a two-month billing period. The appropriate percentage reductions to inside and outside use will be determined by the General Manager, or designee. The per capita allocation method will be used for customers who appeal their allotments. The formula will be similar in structure to that used during the 1987-92 drought. The General Manager, or designee, will determine at the time of the drought the number of gallons per capita per day to be used for the per capita method.

C. Allocation Process

As discussed previously, if the SFPUC anticipates that the reservoir system will be incapable of serving full deliveries to its customers, the SFPUC will announce a drought by March 31st. Consistent with the Interim Water Shortage Allocation Plan, the SFPUC will inform its retail customers of a water shortage by March 31st. The SFPUC will determine water allocations for each retail customer account using the Inside/Outside allocation method. Average winter and summer use factored into the Inside/Outside allocation will be based on water use for each retail customer from the previous year. For drought periods covering consecutive years, allocations will be based on water use for the last year prior to the drought declaration. The SFPUC will provide water use allocations to all retail customers by May 1st of the drought year. The water use allocations will become effective July 1st.

D. Appeal Process

On or before May 1st, retail customers will be notified of their reduced water allocations. Each retail customer will have the opportunity to appeal the allocation based on increased occupancy, medical exemptions, increased business, or other miscellaneous reasons. The SFPUC will provide retail customers with instructions on how to file appeals at the time the customers are notified of the water use allocations. The SFPUC will also inform customers of the methodology to be used in modifying allocations if they are granted.

¹⁰ For illustration purposes the following describes how the per capita method was applied to appeals. The per capita allocation was calculated based on the number of occupants and a formula of 63 gpcpd for the first occupant, 55 gpcpd for the second occupant and 50 gpcpd for each additional occupant with a maximum total of 498 gpd per dwelling unit. As the 1987-92 drought worsened, the per capita allocation was based on the number of occupants and a formula of 50 gpcpd and a maximum total of 300 gpd for single family residences. It is important to note that at the time of the drought the average residential use was 74 gpcpd. Current average demand is 61 gpcpd.

E. Enforcement

The primary methods of enforcing mandatory rationing include excess use charges; installation of flow restrictors and/or shut-off of water.

During the 1987-92 drought excess use charges were applied as follows:

- If a customer consumed up to 10% over their allotment they would be charged 2 times the normal rate;
- If a customer consumed 10.01% to 20% over their allotment they would be charged 8 times the normal rate; and
- If a customer consumed 20.01% or over their allotment they would be charges 10 times the normal rate.

In the event of mandatory rationing, the SFPUC will impose excess use charges similar to those described above. The General Manager, or designee, will inform retail customers of the multiplier rate that will be applied for determining excess use charges. The SFPUC will also offer an audit at the first run-over of the allocation to determine if there are any leaks. In some cases, excess use charges may be reversed if leaks are found and repaired immediately.

In the event that water is used in excess of the customer's specified allotment, the SFPUC could, after one written warning, install a flow restrictor on the customer's service line. The customer may be charged to install and remove the flow restrictor, as was done in the 1987-92 drought. The General Manager, or designee, will determine the relevant charge at the time of the drought. If a customer continues to consume water in excess of its allotment, the SFPUC has the authority to discontinue the customer's water service and require the customer to bear the cost for the re-connection of water service.

The Landlord Pass-through Ordinance¹¹ allows landlords to pass up to 50 percent of excess use charges on to their tenants under the following conditions:

- (a) the landlord must provide written certification that permanently-installed retrofit devices to reduce water use in toilet flushing or low-flow toilets (1.6 gallons per flush), low flow showerheads (no more than 2.5 gallons per minute), and faucet aerators (where installation is physically feasible);
- (b) the landlord provides written certification that there are no none plumbing leaks in the building and that any reported leaks have been fixed; and
- (c) the landlord provides a copy of the water bill for the period in which the penalty was charged.

Under mandatory rationing, the SFPUC will also specify waste water prohibitions that if violated may result in installation of a flow restrictor and shut-off of water, if the violation continues.

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¹¹ San Francisco Administrative Code Section 37.3

All or some of the following water waste prohibitions may be enforced during a drought. The General Manager, or designee, will declare and inform customers of all water waste prohibitions at the time of a drought.

Water Waste Prohibitions

- Water waste, including but not limited to, any flooding or runoff into the street or gutters, shall be prohibited.
- Hoses shall not be used to clean sidewalks, driveways, patios, plazas, homes, businesses, parking lots, roofs, awnings or other hard surfaces areas.
- · Hoses used for any purpose shall have positive shutoff valves.
- · Restaurants shall serve water to customers only upon request.
- Potable water shall not to be used to clean, fill or maintain levels in decorative fountains.
- Use of additional water shall not be allowed for new landscaping or expansion of
 existing facilities unless low water use landscaping designs and irrigation systems are
 employed.
- Water service connections for new construction shall be granted only if water saving fixtures or devices are incorporated into the plumbing system.
- Use of potable water for consolidation of backfill, dust control or other non-essential construction purposes shall be prohibited.
- Irrigation of lawns, play fields, parks, golf courses, cemeteries, and landscaping of any type with potable water shall be reduced by at least the amount specified for outside use in the adopted rationing plan.
- Verified water waste as determined by the Water Department would serve as prima facie evidence that the allocation assigned to the water account is excessive; therefore, the allocation shall be subject to review and possible reduction, including termination of service.
- Water used for all cooling purposes shall be recycled.
- The use of groundwater and/or reclaimed water for irrigation of golf courses, median strips, and similar turf areas shall be strongly encouraged.
- The use of groundwater and/or reclaimed water for street sweepers/washers shall be strongly encouraged.

- The washing of all automobiles, motorcycles, RVS, trucks, transit vehicles, trailers, boats, trains and airplanes shall be prohibited outside of a commercial washing facility.
- Exceptions to the above use restriction will apply to windows on all vehicles and such
 commercial or safety vehicles requiring cleaning for health and safety reasons.
- Water used for all cooling purposes or for commercial car washes shall be recycled.
- The use of potable water on golf courses shall be limited to the irrigation of putting
 greens. The use of groundwater and reclaimed water shall be permitted when
 approved by the Department of Health.
- The filling of new swimming pools, spas, hot tubs or the draining and refilling of
 existing pools, etc., shall be prohibited; topping off shall be allowed to the extent that
 the designated allocation is not exceeded.
- The irrigation of median strips with potable water shall be prohibited. The use of groundwater and reclaimed water shall be permitted when approved by the Department of Health.
- The use of potable water for street sweepers/washers shall be prohibited. The use of groundwater and reclaimed water shall be permitted when approved by the Department of Health.

INTERIM WATER SHORTAGE ALLOCATION PLAN

This Interim Water Shortage Allocation Plan ("Plan") describes the method for allocating water between the San Francisco Public Utilities Commission ("SFPUC") and the Suburban Purchasers collectively during shortages caused by drought. The Plan implements a method for allocating water among the individual Suburban Purchasers which has been adopted by the Suburban Purchasers. The Plan includes provisions for transfers, banking, and excess use charges. The Plan applies only when the SFPUC determines that a system-wide water shortage due to drought exists, and all references to "shortages" and "water shortages" are to be so understood. This Plan is adopted pursuant to Section 7.03(a) of the 1984 Settlement Agreement and Master Water Sales Contract ("Master Contract").

SECTION 1. SHORTAGE CONDITIONS

- 1.1. Projected Available SFPUC Water Supply. The SFPUC shall make an annual determination as to whether or not a shortage condition exists. The determination of projected available water supply shall consider, among other things, stored water, projected runoff, water acquired by the SFPUC from non-SFPUC sources, inactive storage, reservoir losses, allowance for carryover storage, and water bank balances, if any, described in Section 3.
- 1.2 Projected SFPUC Purchases. The SFPUC will utilize purchase data, including volumes of water purchased by the Suburban Purchasers and by Direct City Water Users (as those terms are used in the Master Contract) in the year immediately prior to the drought, along with other available relevant information, as a basis for determining projected system-wide water purchases from the SFPUC for the upcoming year.
- 1.3. Shortage Conditions. The SFPUC will compare the available water supply (Section 1.1) with projected system-wide water purchases (Section 1.2). A shortage condition exists if the SFPUC determines that the projected available water supply is less than projected system-wide water purchases in the upcoming Supply Year (defined as the period from July 1 through June 30). When a shortage condition exists, SFPUC will determine whether voluntary or mandatory actions will be required to reduce purchases of SFPUC water to required levels.
- 1.3.1 Voluntary Response. If the SFPUC determines that voluntary actions will be sufficient to accomplish the necessary reduction in water use throughout its service area, the SFPUC and the Suburban Purchasers will make good faith efforts to reduce their water purchases to stay within their annual shortage allocations and associated monthly water use budgets. The SFPUC will not impose excess use charges during periods of voluntary rationing, but may suspend the prospective accumulation of water bank credits, or impose a ceiling on further accumulation of bank credits, consistent with Section 3.2.1 of this Plan.
- 1.3.2 Mandatory Response. If the SFPUC determines that mandatory actions will be required to accomplish the necessary reduction in water use in the SFPUC service area, the SFPUC may implement excess use charges as set forth in Section 4 of this Plan.

1.4. Period of Shortage. A shortage period commences when the SFPUC determines that a water shortage exists, as set forth in a declaration of water shortage emergency issued by the SFPUC pursuant to California Water Code Sections 350 et seq. Termination of the water shortage emergency will be declared by resolution of the SFPUC.

SECTION 2. SHORTAGE ALLOCATIONS

2.1. Annual Allocations between the SFPUC and the Suburban Purchasers. The annual water supply available during shortages will be allocated between the SFPUC and the collective Suburban Purchasers as follows:

Level of System Wide	Share of Available Water		
Reduction in Water Use Required	SFPUC Share	Suburban Purchasers Share	
5% or less	35.5%	64.5%	
6% through 10%	36.0%	64.0%	
11% through 15%	37.0%	63.0%	
16% through 20%	37.5%	62.5%	

The water allocated to the SFPUC shall correspond to the total allocation for all Direct City Water Users as defined in Section 4.01 of the Master Contract.

2.2 Annual Allocations among the Suburban Purchasers. The annual water supply allocated to the Suburban Purchasers collectively during system wide shortages of 20 percent or less will be apportioned among them based on a methodology adopted by all of the Suburban Purchasers, which shall supersede the provisions of Section 7.03(b) of the Master Contract, as contemplated in Section 7.03(a) of the Master Contract. In any year for which the methodology must be applied, the Bay Area Water Users Association ("BAWUA") will calculate each Suburban Purchaser's individual percentage share of the amount of water allocated to the Suburban Purchasers collectively pursuant to Section 2.1. Following the declaration or reconfirmation of a water shortage emergency by the SFPUC, BAWUA will deliver to the SFPUC General Manager a list, signed by the President of BAWUA's Board of Directors and its General Manager, showing each Suburban Purchaser together with its percentage share and stating that the list has been prepared in accordance with the methodology adopted by the Suburban Purchasers. The SFPUC shall allocate water to each Suburban Purchaser, as specified in the list. The shortage allocations so established may be transferred as provided in Section 2.5 of this Plan.

The methodology adopted by the Suburban Purchasers utilizes the rolling average of each individual Suburban Purchaser's purchases from the SFPUC during the three immediately preceding Supply Years. The SFPUC agrees to provide BAWUA by November 1 of each year a list showing the amount of water purchased by each Suburban Purchaser during the immediately preceding Supply Year. The list will be prepared using Customer Service Bureau report MGT440 (or comparable official record in use at the time), adjusted as required for any reporting

errors or omissions, and will be transmitted by the SFPUC General Manager or his designee.

2.3. Limited Applicability of Plan to System Wide Shortages Greater Than Twenty Percent. The allocations of water between the SFPUC and the Suburban Purchasers collectively, provided for in Section 2.1, apply only to shortages of 20 percent or less. The SFPUC and Suburban Purchasers recognize the possibility of a drought occurring which could create system-wide shortages greater than 20 percent despite actions taken by the SFPUC aimed at reducing the probability and severity of water shortages in the SFPUC service area. If the SFPUC determines that a system wide water shortage greater than 20 percent exists, the SFPUC and the Suburban Purchasers agree to meet within 10 days and discuss whether a change is required to the allocation set forth in Section 2.1 in order to mitigate undue hardships that might otherwise be experienced by individual Suburban Purchasers or Direct City Water Users. Following these discussions, the water allocation set forth in Section 2.1 of this Plan, or a modified version thereof, may be adopted by mutual written consent of the SFPUC and the Suburban Purchasers. If the SFPUC and Suburban Purchasers meet and cannot agree on an appropriate allocation within 30 days of the SFPUC's determination of water shortage greater than 20 percent, then (1) the provisions of Section 7.03(b) of the Master Contract will apply. unless (2) all of the Suburban Purchasers direct in writing that an allocation methodology agreed to by them be used to apportion the water to be made available to the Suburban Purchasers collectively, in lieu of the provisions of Section 7.03(b).

The provisions of this Plan relating to transfers (in Section 2.5), banking (in Section 3), and excess use charges (in Section 4) shall continue to apply during system-wide shortages greater than 20 percent.

2.4. Monthly Water Budgets. Within 10 days after adopting a declaration of water shortage emergency, the SFPUC will determine the amount of water allocated to the Suburban Purchasers collectively pursuant to Section 2.1. The SFPUC General Manager, using the percentages shown on the list delivered by BAWUA pursuant to Section 2.2, will calculate each Suburban Purchaser's individual annual allocation. The SFPUC General Manager, or his designee, will then provide each Suburban Purchaser with a proposed schedule of monthly water budgets based on the pattern of monthly water purchases during the Supply Year immediately preceding the declaration of shortage (the "Default Schedule"). Each Suburban Purchaser may, within two weeks of receiving its Default Schedule, provide the SFPUC with an alternative monthly water budget that reschedules its annual shortage allocation over the course of the succeeding Supply Year. If a Suburban Purchaser does not deliver an alternative monthly water budget to the SFPUC within two weeks of its receipt of the Default Schedule, then its monthly budget for the ensuing Supply Year shall be the Default Schedule proposed by the SFPUC.

Monthly water budgets will be derived from annual allocations for purposes of accounting for excess use. Monthly water budgets shall be adjusted during the year to account for transfers of shortage allocation under Section 2.5 and transfers of banked water under Section 3.4.

2.5. Transfers of Shortage Allocations. Voluntary transfers of shortage allocations between the SFPUC and any Suburban Purchasers, and between any Suburban Purchasers, will be permitted using the same procedure as that for transfers of banked water set forth in Section 3.4. The

SFPUC and the Bay Area Water Users Association (BAWUA) shall be notified of each transfer. Transfers of shortage allocations shall be deemed to be emergency transfers described in Sections 7.05 and 7.07(a) of the Master Contract and shall become effective on the third business day after notice of the transfer has been delivered to the SFPUC. Transfers of shortage allocations shall be in compliance with Section 7.05 of the Master Contract. The transferring parties will meet with the SFPUC, if requested, to discuss any effect the transfer may have on its operations.

SECTION 3. SHORTAGE WATER BANKING

- 3.1. Water Bank Accounts. The SFPUC shall create a water bank account for itself and each Suburban Purchaser during shortages in conjunction with its resale customer billing process. Bank accounts will account for amounts of water that are either saved or used in excess of the shortage allocation for each agency; the accounts are not used for tracking billings and payments. When a shortage period is in effect (as defined in Section 1.4), the following provisions for bank credits, debits, and transfers shall be in force. A statement of bank balance for each Suburban Purchaser will be included with the SFPUC's monthly water bills.
- 3.2. Bank Account Credits. Each month, monthly purchases will be compared to the monthly budget for that month. Any unused shortage allocation by an agency will be credited to that agency's water bank account. Credits will accumulate during the entire shortage period, subject to potential restrictions imposed pursuant to Section 3.2.1. Credits remaining at the end of the shortage period will be zeroed out; no financial or other credit shall be granted for banked water.
- 3.2.1. Maximum Balances. The SFPUC may suspend the prospective accumulation of credits in all accounts. Alternatively, the SFPUC may impose a ceiling on further accumulation of credits in water bank balances based on a uniform ratio of the bank balance to the annual water allocation. In making a decision to suspend the prospective accumulation of water bank credits, the SFPUC shall consider the available water supply as set forth in Section 1.1 of this Plan and other reasonable, relevant factors.
- 3.3. Account Debits. Each month, monthly purchases will be compared to the budget for that month. Purchases in excess of monthly budgets will be debited against an agency's water bank account. Bank debits remaining at the end of the fiscal year will be subject to excess use charges (see Section 4).
- 3.4. Transfers of Banked Water. In addition to the transfers of shortage allocations provided for in Section 2.5, voluntary transfers of banked water will also be permitted between the SPPUC and any Suburban Purchaser, and among the Suburban Purchasers. The volume of transferred water will be credited to the transferee's water bank account and debited against the transferror's water bank account. The transferring parties must notify the SFPUC and BAWUA of each transfer in writing (so that adjustments can be made to bank accounts), and will meet with the SFPUC, if requested, to discuss any affect the transfer may have on SFPUC operations. Transfers of banked water shall be deemed to be emergency transfers described in Sections 7.05 and 7.07(a) of the Master Contract and shall become effective on the third business day after notice of the transfer has been delivered to the SFPUC. If the SFPUC incurs extraordinary costs in implementing transfers, it will give written notice to the transfering parties within ten (10)

business days after receipt of notice of the transfer. Extraordinary costs means additional costs directly attributable to accommodating transfers and which are not incurred in non-drought years nor simply as a result of the shortage condition itself. Extraordinary costs shall be calculated in accordance with the procedures in the Master Contract and shall be subject to the disclosure and auditing requirements in the Master Contract. In the case of transfers between Suburban Purchasers, such extraordinary costs shall be considered to be expenses chargeable solely to individual Suburban Purchasers and shall be borne equally by the parties to the transfer. In the case of transfers between the SFPUC and a Suburban Purchaser, the SFPUC's share of any extraordinary transfer costs shall not be added to the Suburban Revenue Requirement.

3.4.1. Transfer Limitations. The agency transferring banked water will be allowed to transfer no more than the accumulated balance in its bank. Transfers of estimated prospective banked credits and the "overdrafting" of accounts shall not be permitted. The price of transfer water originally derived from the SFPUC system is to be determined by the transferring parties and is not specified herein. Transfers of banked water shall be in compliance with Section 7.05 of the Master Contract.

SECTION 4. WHOLESALE EXCESS USE CHARGES

- 4.1. Amount of Excess Use Charges. Monthly excess use charges shall be determined by the SFPUC at the time of the declared water shortage consistent with the calendar in Section 6 and in accordance with Section 5.03 of the Master Contract. The excess use charges will be in the form of multipliers applied to the rate in effect at the time the excess use occurs. The same excess use charge multipliers shall apply to the Suburban Purchasers and all Direct City Water Users. The excess use charge multipliers apply only to the charges for water
- delivered at the rate in effect at the time the excess use occurred.

 4.2 Monitoring Suburban Water Use. During periods of voluntary rationing, water usage
- 4.2 Monitoring Suburban Water Use. During periods of voluntary rationing, water usage greater than a customer's allocation (as determined in Section 2) will be indicated on each SFPUC monthly water bill. During periods of mandatory rationing, monthly and cumulative water usage greater than a Suburban Purchaser's shortage allocation and the associated excess use charges will be indicated on each SFPUC monthly water bill.
- 4.3. Suburban Excess Use Charge Payments. An annual reconciliation will be made of monthly excess use charges according to the calendar in Section 6. Annual excess use charges will be calculated by comparing total annual purchases for each Suburban Purchaser with its annual shortage allocation (as adjusted for transfers of shortage allocations and banked water, if any). Excess use charge payments by those Suburban Purchasers with net excess use will be paid according to the calendar in Section 6. The SFPUC and the Suburban Purchasers have discussed the possibility of dedicating excess use charges paid by Suburban Purchasers toward the purchase of water from the State Drought Water Bank or other willing sellers in order to provide additional water to the Suburban Purchasers. The parties may continue discussions of this concept in order to develop the accounting and operational details of such a program. However, unless and until the SFPUC and the Suburban Purchasers agree in writing to an amendment of the Plan to implement such a program, excess use charges paid by the Suburban Purchasers constitute "revenues received from the Suburban Purchasers for the sale of water" for purposes of Section 5.07 of the Master Contract.

SECTION 5. GENERAL PROVISIONS GOVERNING WATER SHORTAGE ALLOCATION PLAN

- 5.1. Construction of Terms. This Plan is for the sole benefit of the parties and shall not be construed as granting rights to any person other than the parties or imposing obligations on a party to any person other than another party.
- 5.2. Governing Law. This Plan is made under and shall be governed by the laws of the State of California
- 5.3. Effect on Master Contract. This Plan describes the method for allocating water between the SFPUC and the collective Suburban Purchasers during system-wide water shortages of 20 percent or less. This Plan also provides for the SFPUC to allocate water among the Suburban Purchasers in accordance with directions provided by the Suburban Purchasers through BAWUA under Section 2.2, and to implement a program by which such allocations may be voluntarily transferred among the Suburban Purchasers. The provisions of this Plan are intended to implement Section 7.03(a) of the Master Contract and do not affect, change or modify any other section, term or condition of the Master Contract.
- 5.4. Role of Suburban Advisory Group. Section 8.04 of the Master Contract identifies the Suburban Advisory Group as a forum for ensuring that the Suburban Purchasers are informed of matters affecting the SFPUC water system. Regularly scheduled meetings of the Suburban Advisory Group will be used to ensure that the important information concerning potential water shortages is provided to the Suburban Purchasers for consideration and examination. The parties agree to meet upon request up to two times per month in order to keep the SFPUC and the Suburban Advisory Group (or a subset of that group) informed of the status of the available water supply and measures under consideration to alleviate shortage conditions affecting the SFPUC water system.
- 5.5. Inapplicability of Plan to Allocation of SFPUC System Water During Non-Shortage Periods and to Water Wheeling. The SFPUC's agreement in this Plan to a respective share of SFPUC system water during years of shortage shall not be construed to provide a basis for the allocation of water between the SFPUC and the Suburban Purchasers when no water shortage emergency exists. Nor shall this Plan provide any precedent for the transfer, banking, determination of available capacity, or rate to be charged for water proposed to be wheeled through the SFPUC system from non-SFPUC sources by any person or entity under Water Code Section 1810 et seq.
- 5.6. Termination. This Plan shall expire on June 30, 2009. The SFPUC and the Suburban Purchasers can mutually agree to revise or terminate this Plan prior to that date due to changes in the water delivery capability of the SFPUC system, the acquisition of new water supplies, and other factors affecting the availability of water from the SFPUC system during times of shortage.

SECTION 6. ALLOCATION CALENDAR

6.1. Annual Schedule. The annual schedule for the shortage allocation process is shown below. This schedule may be changed by the SFPUC to facilitate implementation.

	In All Years	Target Dates
1.	SFPUC delivers list of annual purchases by each Suburban Purchaser during the immediately preceding Supply Year	November 1
2.	SFPUC meets with the Suburban Advisory Group and presents water supply forecast for the following Supply Year	January 1-30
3.	SFPUC issues initial estimate of available water supply	February 1
4.	SFPUC announces potential first year of drought (if applicable)	February 1
5.	SFPUC and Suburban Advisory Group meet upon request to exchange information concerning water availability and projected system-wide purchases	February 1-May 31
6.	SFPUC issues revised estimate of available water supply, and confirms continued potential shortage conditions, if applicable	March 1
7.	SFPUC issues final estimate of available water supply	March 15
8.	SFPUC determines amount of water available to Suburban Purchasers collectively	March 15
	In Drought Years	Target Dates
9.	SFPUC formally declares the existence of water shortage emergency (or end of water shortage emergency, if applicable) under Water Code Sections 350 et. seq.	March 15-31
10.	SFPUC declares the need for a voluntary or mandatory response	March 15-31
11	BAWUA submits calculation to SFPUC of individual Suburban	37 1 17 01
11.	Purchasers' percentage shares of water allocated to Suburban Purchasers collectively	March 15- 31
	Purchasers' percentage shares of water allocated to Suburban	March 15- 31 March 25—April 10
12.	Purchasers' percentage shares of water allocated to Suburban Purchasers collectively SFPUC determines individual shortage allocations, based on BAWUA's submittal of individual agency percentage shares to SFPUC, and monthly water budgets (Default Schedule) Suburban Purchasers submit alternative monthly water budgets (optional)	
12.	Purchasers' percentage shares of water allocated to Suburban Purchasers collectively SFPUC determines individual shortage allocations, based on BAWUA's submittal of individual agency percentage shares to SFPUC, and monthly water budgets (Default Schedule) Suburban Purchasers submit alternative monthly water budgets	March 25—April 10
12. 13. 14.	Purchasers' percentage shares of water allocated to Suburban Purchasers collectively SFPUC determines individual shortage allocations, based on BAWUA's submittal of individual agency percentage shares to SFPUC, and monthly water budgets (Default Schedule) Suburban Purchasers submit alternative monthly water budgets (optional) Final drought shortage allocations are issued for the Supply Year	March 25—April 10 April 8-April 24
12. 13. 14. 15.	Purchasers' percentage shares of water allocated to Suburban Purchasers collectively SFPUC determines individual shortage allocations, based on BAWUA's submittal of individual agency percentage shares to SFPUC, and monthly water budgets (Default Schedule) Suburban Purchasers submit alternative monthly water budgets (optional) Final drought shortage allocations are issued for the Supply Year beginning July 1 through June 30	March 25—April 10 April 8-April 24 May 1

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San Francisco 2005 Draft Urban Water Management Plan

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INTERIM WATER SHORTAGE ALLOCATION PLAN AMONG SUBURBAN PURCHASERS

This Interim Water Shortage Allocation Plan ("Tier Two Plan") describes the method for allocating the water made available by the San Francisco Public Utilities Commission ("SFPUC"), during shortages caused by drought, among the Suburban Purchasers. This Plan applies only when the SFPUC determines that a system-wide water shortage due to drought exists, and all references to "shortages" and "water shortages" are to be so understood. This Plan is adopted pursuant to Section 7.03(a) of the 1984 Settlement Agreement and Master Water Sales Contract between the City and County of San Francisco and the Suburban Purchasers ("Master Contract").

SECTION 1. APPLICABILITY AND INTEGRATION

Section 1.1 Applicability. This Tier Two Plan applies when, and only when, the SFPUC determines that a system-wide water shortage of 20 percent or less exists, as set forth in a declaration of water shortage emergency adopted by the SFPUC pursuant to California Water Code Sections 350 et seq. This Tier Two Plan applies only to water acquired and distributed by the SFPUC to the Suburban Purchasers and has no effect on water obtained by a Suburban Purchaser from any source other than the SFPUC.

Section 1.2 Integration with SFPUC Interim Water Shortage Allocation Plan (Tier One Plan). The SFPUC has adopted an Interim Water Shortage Allocation Plan (Tier One Plan) which, among other things, (a) provides for the allocation by the SFPUC of water between Direct City Water Users (e.g., retail water customers within the City and County of San Francisco) and the Suburban Purchasers collectively during system-wide water shortages of 20 percent or less, (b) contemplates the adoption by the Suburban Purchasers of this Tier Two Plan for allocation of the water made available to Suburban Purchasers collectively among the 29 individual Suburban Purchasers, (c) commits the SFPUC to implement this Tier Two Plan, and (d) provides for the transfer of both "banked" water and shortage allocations between and among the Suburban Purchasers and commits the SFPUC to implement such transfers.

This Tier Two Plan is intended to be integrated with the Tier One Plan described in this Section 1.2. Both Plans becoming operative only if both have been approved by all 29 Suburban Purchasers. Terms used in this Tier Two Plan are intended to have the same meaning as such terms have in the Tier One Plan.

SECTION 2. ALLOCATION OF WATER AMONG SUBURBAN PURCHASERS

Section 2.1 Annual Allocations Among the Suburban Purchasers. The annual water supply allocated by the SFPUC to the Suburban Purchasers collectively during system-wide shortages of 20 percent or less shall be apportioned among them based on the methodology described in this Section 2.

Section 2.2 Methodology for Allocating Water Among Suburban Purchasers. The water made available to the Suburban Purchasers collectively will be allocated among them in

proportion to each Suburban Purchaser's allocation factor, adjusted as described in Section 2.2.4 below.

Section 2.2.1 Step One: Determination of Allocation Basis for Each Suburban Purchaser. Each Suburban Purchaser's Allocation Basis is an amount, expressed in millions of gallons per day (mgd), which in turn is the arithmetic average of three components. Two of these components are fixed as of the date this Tier Two Plan is adopted; the third component is variable and will be determined when a shortage has been declared by the SFPUC.

The first component is (i) the greater of a Suburban Purchaser's Supply Assurance provided for in the Master Contract or its average purchases from SFPUC during three fiscal years 1996-97, 1997-98, and 1998-99, or (ii) in the case of Hayward and Estero Municipal Improvement District, their projected purchases from SFPUC in FY 2010-11 as reported in the 1998-99 Annual Survey published by BAWUA, or (iii) in the case of San Jose and Santa Clara, the limits on purchases from SFPUC set forth on Exhibit M to the Master Contract. The amount of this first component for each Suburban Purchaser is shown on Attachment A-1.

The second component is the average of each Suburban Purchaser's purchases from SFPUC during the fiscal years 1996-97, 1997-98, and 1998-99. The amount of this second component for each Suburban Purchaser is shown on Attachment A-2.

The third component is the average of each Suburban Purchaser's purchases from SFPUC during the three fiscal years immediately preceding the declaration of water shortage emergency by the SFPUC.

Section 2.2.2 Step Two: Determination of Allocation Factor for Each Suburban Purchaser. Each Suburban Purchaser's Allocation Factor is a percentage derived from a fraction, the numerator of which is the particular Suburban Purchaser's Allocation Basis (in mgd) as calculated in Step One and the denominator of which is the sum (in mgd) of all Suburban Purchasers' Allocation Bases.

Section 2.2.3 Step Three: Determination of Initial Shortage Allocation for Each Suburban Purchaser. The initial shortage allocation for each Suburban Purchaser is determined by multiplying the amount of water available to the Suburban Purchasers collectively (determined pursuant to Section 2.1 of the Tier One Plan) by the Suburban Purchaser's Allocation Factor (i.e., the percentage calculated pursuant to Section 2.2.2).

Section 2.2.4 Step Four: Determination of Final Shortage Allocation for Each Suburban Purchaser. Once the initial shortage allocations are determined, the percentage reductions from each Suburban Purchaser's purchases from the SFPUC in the fiscal year immediately preceding the declaration of water shortage emergency will be calculated as a fraction, the numerator of which is the Suburban Purchaser's initial shortage allocation (determined pursuant to Section 2.2.3), and the denominator of which is the amount purchased from the SFPUC during such fiscal year. The result, as a percentage carried to two places to the right of the decimal, will be subtracted from 100%; the result is the Suburban Purchaser's percentage reduction.

The percentage reductions for San Jose and Santa Clara will be compared to the highest percentage reduction of the other Suburban Purchasers. If both San Jose's and Santa Clara's percentage reduction is larger than the highest percentage reduction among other Suburban Purchasers, the initial shortage allocations established under Section 2.2.3 will become the final

shortage allocations. If either San Jose's percentage reduction or Santa Clara's percentage reduction, or both, is smaller than the highest percentage reduction of other Suburban Purchasers, the shortage allocation (in mgd) of San Jose or Santa Clara, or both, will be reduced so that the percentage reduction of each is no smaller than that of the otherwise highest percentage reduction.

The amount of shortage allocation (in mgd) removed from San Jose and/or Santa Clara will be reallocated among the remaining Suburban Purchasers in proportion to the initial shortage allocation of each calculated as a fraction the numerator of which is the individual initial shortage allocation and the denominator of which is the sum of the initial shortage allocation for the remaining Suburban Purchasers (not including San Jose and Santa Clara).

After such reallocation, the resulting amounts will be the final shortage allocation for each Suburban Purchaser.

Section 2.2.5 Example Calculation. Attachment A-3 presents a sample of the calculations involved in Steps One through Four, using the values from Attachments A-1 and A-2 and recent water use data for the other values. It is presented for illustrative purposes only and does not supersede the foregoing provisions of this Section 2.2. In the event of any inconsistency between this Section 2.2 and Attachment A-3, the text of this section will govern.

Section 2.3 Calculation of Individual Suburban Purchaser's Allocations: Directions to SFPUC. The Tier One Plan contemplates that in any year in which the methodology described above must be applied, the Bay Area Water Users Association ("BAWUA") will calculate each Suburban Purchaser's individual percentage share of the amount of water made available to the Suburban Purchasers collectively, following the methodology described above. The Tier One Plan requires SFPUC to allocate water to each Suburban Purchaser in accordance with calculations delivered to it by BAWUA.

The Tier One Plan requires that each year, the SFPUC will provide to BAWUA by November 1 a list showing the amount of water purchased by each Suburban Purchaser during the immediately preceding Supply Year. The list will be prepared using Customer Service Bureau report MGT 440 (or comparable official record in use at the time), adjusted as required for any reporting errors or omissions, and will be signed by the SFPUC General Manager.

Each Suburban Purchaser authorizes BAWUA to perform the calculations required, using water sales data furnished to it by the General Manager of the SFPUC, and to deliver a list of individual Suburban Purchasers' percentage shares so calculated to SFPUC as contemplated by the SFPUC Plan. Neither BAWUA nor any officer or employee of BAWUA shall be liable to any Suburban Purchaser for any such calculations made in good faith, even if incorrect.

SECTION 3. GENERAL PROVISIONS

<u>Section 3.1</u> <u>Construction of Terms</u>. This Tier Two Plan is for the sole benefit of the parties and shall not be construed as granting rights to any person other than the parties or imposing obligations on a party to any person other than another party.

Section 3.2 Governing Law. This Tier Two Plan is made under and shall be governed by the laws of the State of California.

Section 3.3 Effect on Master Contract. This Tier Two Plan describes the method for allocating water from the SFPUC among the Suburban Purchasers during system-wide water shortages of 20 percent or less declared by the SFPUC. The provisions of this Tier Two Plan, and the Tier One Plan with which it is intended to be integrated, are intended to implement Section 7.03(a) of the Master Contract. Both the Tier One and Tier Two Plans constitute the water conservation plan contemplated by Section 7.03(a) and supersede the provisions of Section 7.03(b). The Plans do not affect, change or modify any other section, term or condition of the Master Contract.

Section 3.4 Amendment. This Tier Two Plan may be amended only by written agreement of all Suburban Purchasers.

Section 3.5 Termination. This Tier Two Plan shall expire on June 30, 2009. It may be terminated prior to that date only by the written agreement of all Suburban Purchasers.

ATTACHMENT A-1

The amount of the first component for each Suburban Purchaser is shown below.

Suburban Purchasers	First Fixed Component (mgd)
ACWD	13.76
Belmont	3.89
Brisbane	0.46
Burlingame	5.23
Coastside	2.18
Cordilleras	0.01
CWS Total	35.39
Daly City .	4.49
East Palo Alto	2.18
Estero	7.23
Guadalupe	0.52
Hayward	24.00
Hillsborough	4.09
Los Tranços	0.11
Menlo Park	4.24
Millbrae	3.15
Milpitas	9.23
Mountain View	13.46
North Coast	3.84
Palo Alto	17.07
Purissima Hills	1.85
Redwood City	10.93
San Bruno	3.25
Skyline	0.18
Stanford	3.03
Sunnyvale	12.58
Westborough	1.32
San José	2.68
Santa Clara	6.57

ATTACHMENT A-2

The amount of the second component for each Suburban Purchaser is shown below.

Suburban Purchasers	Second Fixed Component (mgd)
ACWD	11.95
Belmont	3.26
Brisbane	0.30
Burlingame	4.68
Coastside	1.35
Cordilleras	0.01
CWS Total	33.42
Daly City	4.49
East Palo Alto	2.10
Estero	5.45
Guadalupe	0.27
Hayward	17.56
Hillsborough	3.60
Los Trancos	0.10
Menlo Park	3.43
Millbrae	2.64
Milpitas	6.80
Mountain View	10.36
North Coast	3.29
Palo Alto	12.96
Purissima Hills	1.85
Redwood City	10.92
San Bruno	2.01
Skyline	0.16
Stanford	2.58
Sunnyvale	10.73
Westborough	0.98
San José	4.10
Santa Clara	4.72

ATTACHMENT A-3

Sample Calculation



Attachment A-3 Sar 'e Carculation

23.6% Average Suburban Reduction froi... FY 98-99 Purchases (Units in million gallons per day unless otherwise noted)

(13)

(11)

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		Allocation Basis	n Basis			Unadj	Unadjusted Allocations	ons		Allocatio	Allocations Adj. for Santa Clara & San José	a Clara & Sa) José	
-	First	Second				Initial				Subtotal	Adjusted			Final
Suburban	Fixed	Fixed	Variable		Allocation	Shortage	FY 98-99	Initial	-e	Allocation	Shortage	Adjusted	peq	Individual
Purchasers	Component	Component	Component Component	Average	Factors	Allocation	Purchases	Purchase Cutback	utback	Factors	Allocation	Purchase Cutback	utback	Share
GWD	13.76	11.95	11.95	12.55	7.12%	9.16	11.96	-2.80	-23.41%	7.50%	9.18	-2.78	-23.23%	7.13%
Jelmont	3.89	3.26	3.26	3.47	1.97%	2.53	3.35	-0.81	-24.25%	2.07%	2.54	-0.81	-24.08%	1.97%
rishane	0.46	030	0,30	0.35	0.20%	0.26	0.34	-0.08	-23.61%	0.21%	0.26	-0.08	-23.43%	0.20%
urlingame	5.23	4.68	4.68	4.86	2.76%	3.55	4.65	-1.10	-23.57%	2.91%	3.56	-1.09	-23.40%	2.76%
oastside	2.18	1.35	1.35	1.62	0.92%	1.19	1.48	-0.29	-19.74%	6.07%	1.19	-0.29	-19.56%	0.92%
ordilleras	10.0	0.01	0.01	10:0	0.00%	0.00	0.01	00.00	-25.89%	0.00%	0000	0.00	-25.72%	0.00%
WS Total	35.39	33.42	33.42	34.07	19.32%	24.87	33.45	-8.58	-25.64%	20.36%	24.93	-8.52	-25.48%	19.37%
Daly City	4.49	4.49		4.49	2.55%	3.28	4.55	-1.27	-27.85%	2.69%	3.29	-1.26	-27.68%	2.55%
act Palo Alto	2.18	2.10	2.10	2.13	1.21%	1.55	2.07	-0.52	-25.13%	1.27%	1.55	-0.52	-24.96%	1.21%
ctoro	7.23	5.45	5,45	6.05	3.43%	4.41	5.57	-1.15	-20.73%	3.61%	4.42	-1.14	-20.55%	3.44%
Jundalima	0.50	0.27		0.35	0.20%	0.26	0.28	-0.02	-7.39%	0.21%	0.26	-0.02	-7.18%	0.20%
Jamana	24.00	17.56	17.56	19.71	11.18%	14.39	17.77	-3.38	-19.04%	11.77%	14.42	-3,35	-18.86%	11.20%
Hillshorough	4 09	3.60		3.76	2.13%	2.75	3.39	-0.64	-18.83%	2.25%	2.75	-0.63	-18.65%	214%
oe Trancoe	110	0.10		0.10	0.06%	0.07	0.10	-0.03	-26.93%	%90.0	0.07	-0.03	-26.77%	0.06%
tonio Park	424	3.43	3.43	3.70	2.10%	2.70	3.39	-0.69	-20.45%	2.21%	2.71	69'0-	-20.27%	2.10%
fillbrae	3.15	2.64	2.64	2.81	1.59%	2.05	2.63	-0.58	-21.91%	1.68%	2.06	-0.57	-21.74%	1.60%
Gluitae	923	6.80	6.80	7.61	4.31%	5.55	6.80	-1.24	-18.29%	4.55%	. 5.57	-1.23	-18.11%	4.32%
foundain Vio	13.46	10 36	10.36	11.40	6.46%	8.32	10.25	-1.93	-18.81%	6.81%	8.34	-1.91	-18.62%	6.48%
Joseph Coast	3.84	3.29	3.29	3.47	1.97%	2.54	3.34	-0.80	-24.02%	2.07%	2.54	-0.80	-23.85%	1.97%
Agran Coast	17.07	12.96	12.96	14.33	8.13%	10.46	13.04	-2.58	-19.78%	8.56%	10.49	-2.56	19.60℃	8.15%
dio ratio	185	1.85	1.85	1.85	1.05%	1.35	1.93	-0.59	-30.37%	1.10%	1.35	-0.58	-30.21%	1.05%
adamod City	10.93	10.92	10.92	10.92	6.19%	7.97	11.42	-3.45	-30.19%	6.52%	7.99	-3.43	-30.03%	6.21%
dan Britino	3.25	2.01	2.01	2.42	1.37%	1.77	2.47	-0.71	-28.54%	1.45%	1.77	-0.70	-28.38%	1.37%
Styline	0.18	0.16	0.16	0.17	0.09%	0.12	0.16	-0.04	-24.69%	0.10%	0.12	-0.04	-24.52%	0.10%
d'anford	3.03	2.58	2.58	2.73	1.55%	1.99	2.56	-0.57	-22.23%	1.63%	2.00	-0.57	-22.06%	1.55%
Summercale	12.58	10.73	10.73	11.34	6.43%	8.28	11.22	-2.94	26.19%	6.78%	8.30	-2.92	-26.02%	6.45%
Vorthorough	130	0 98	0.98	1.09	0.62%	0.80	1.00	-0.20	-20.27%	0.65%	080	-0.20	-20.09%	0.62%
Subtotal	187.67	157.23	15	167.38		122.19	~ 159.17	-36.98	-23.24%	100.00%	122.47	-36.71	-23.06%	
							-	9 1	9 11		37 6	-1 48	35.85%	2.06%
San losé	2.68	4.10		3,63	2.06%	2.65	4.13	-1.40	-30.00 A		7.00	01.10	20.00	2000
Santa Clara	6.57	4.72		5.34	3.03%	3.90	5.20	-1.30	-25.04%		3.62	-1.58	-30.37%	281%
-	1	2000	10000	176.35	200 (X)1	17072	168 50	34 77	-23 60%		128.73	-39.77	-23.60%	100.00%

3.62 (Applying largest permanent customer cutback) – 0.28 (Difference between initial and adjusted alloc.) 2.87 (Applying largest permanent customer cutback) 0.00 (Difference between initial and adjusted alloc.)

-0.28 (2b + 3b)

Largest pernament customer cuthack:
 A dijusted Santa Clera shortage altocation:
 Sand Clera adjustment:
 And Aplisted San José shortage allocation:
 San José adjustment:
 Total Adjustment:
 Total Adjustment:

Derivation of the Santa Clara/San José adjustment:

23.6% shortage for the Suburban Purchasors compared to FY 1998.99 purchases.

1. First Fixed Component: The greater of either the Supply Assurance values or the three-year average of SEPUC purchases for PYs 1996-97, 1997-98, and 1998-99, with certain exceptions a. Daly City's and Parissima Hilfs values are based on their three-year averages, which is greater than their Supply Asstratace values. Alexation hasts. The Alexation Hasis is used for calculating Albertion factors and is the average of the following three companions.

- b. Hayward's and Esteer's volues are based on their 2000-11 projected parchases, as reported in the BAWUA 1997-98 Annual Survey. c. San Josés and Surta Clara's values are lassed on the water supply caps in their individual water supply contracts with the SFFUC.
 - A. Variatie Compunent. The rolling three-year average, updated annually, beginning with FYs 1996-97, 1997-38, and 1998-99. Second Fixed Companent: The average of SFPUC purchases for FYs 1996-97, 1997-98, and 1998-99.

 - 4. Average: The average of columns 1, 2, and 3.
- Unadjusted Aliceations. The initial slavinge allocations in column 6 are adjusted for Santa Chan and San Jusé in columns 10 through 1.3.

6. Initial Shortage Allocation: The product of each Sabardaan Purchaser's column 5 Allocation Eactor times the column 6 total, which represents the assumed available water supply. 5. Allocation Factors: The ratio of each Suburban Purchasor's column 4 average to the column 4 total.

- 7, FY 1998-99 Furchases. The most recent year's purchases to which the Stortage Alboration can be compared to determine the effective cuthards.

 - 9. Purchase Cutback: The ratio of column 8 to column 7, in percent. 8. Purchase Cuthack: Column 6 minus column 7, in mgd.
- Albestions Adjusted for Sauto Cara and San José. This adjustment is made so that Santa Clara's and San José's cuttacks are at least as great as the highest enthack by the permanent enstoners. In this example, there is no adjustment required for San José because the formula results in an unadjusted cutback that is already greater than the highest cutback by a permanent customer.

11. Adjusted Shartage Alecation: The product of each Salaurban Purchaser's column 10 Subsual Albecation Factor times the Column 11 subtotal 10. Sultotal Albertion Factors. The ratio of coch pernament Subarban Purchaser's column 4 average to the column 4 subtietal.

- b. The Sama Clara adjustment is the difference between its column 6 Initial Shortage Alucation, 3.72, and its Adjusted Shortage Alucation, 3.48. a. The column H subtotal is the sum of the column 6 subtotal plus the Santa Clara adjustment, 0.26.
- c. Smite Char's Adjusted Shortage Albeation is the product of its column's average and the largest Purchase Culback, 33 57%, received by the permanent Suburban Purchasers.
 - Adjusted Purchase Cuthack: Column 11 minus column 7, in mgd.
- Adjusted Purchase Cuthack: Creaming 12 to column 7, in percent.
 Adjusted Purchase Cutback: The ratio of column 12 to column 7, in percent.

San Francisco 2005 Draft Urban Water Management Plan

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San Francisco 2005 Draft Urban Water Management Plan

Appendix D

San Francisco's BMP Activity and Coverage Reports to CUWCC

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- Reporting Period 03-04 BMP Reports - Reporting Period 01-02 BMP Reports
- Year 2004 Coverage Report Year 2003 Coverage Report
- Year 2002 Coverage Report
- Year 2001 Coverage Report
 - Year 2000 Coverage Report

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Page 1 of 19	
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Reported as of 10,

BMP 01 Coverage: Water Survey Programs for Single-Family and Multi-Family Residential Customers Reporting Period:

MOU Exhibit 1 Coverage Requirement Reporting Unit: San Francisco PUC - Retall

Agency indicated "at least as affective as" implamentation during report period? No exemption request filed

ş

A Reporting Unit (RU) must meet three conditions to salisfy strict compliance for BMP 1.

Condition 2: Offer surveys to 20% of SF accounts and 20% of MF units during report period Condition 1. Adopt survey largeling and marketing strategy on time

Cendition 3 8a on track to survey 15% of SF accounts and 15% of MF unts within 10 years of implementation start date.

	1999	A
Test for Condition 1	San Francisco PUC - Retail to Implement Targeting/Marketing Program by:	

1989 YES Implementing Targeting/Marketing Program: San Francisco PUC - Retail Met Targeting/Marketing Year San Francisco PUC - Retail Reported Coverage Requirement:

1995 YES

Test for Condition 2

Multi-Family	6.40%	Q.	
Single-Family	29.76%	YES	
	Residential Survey Offers (%)	Survey Offers > 20%	
	1998	03-04	on 3
	Survey Program to Start by:	Reporting Period:	Test for Condition 3

	Completed Residential Surveys	Residential eys	
Total Completed Surveys 1999 - 2004;	27,564	33,237	
Past Credit for Surveys Completed Prior to 1999 (Implementation of Reporting Database):	7,937	20,641	
Total + Credit	35,501	53,878	
Residential Accounts in Base Year	107,533	227,541	

http://bmp.cuwcc.org/bmp/print/printcoverageall.lasso

10/6/2005

7 90% 7 90% YES San Francisco PUC - Retail Survey Coverage as % of San Francisco PUC - Retail on Schedule to Meet 10-Coverage Requirement by Year 7 of Implementation per Exhibit 1 Base Year Residential Accounts Year Coverage Requirement

Page 2 of 19

Water supplier has not met one or more coverage requirements for this BMP. BMP 1 COVERAGE STATUS SUMMARY:

Q	s for this BMP.																		
ZZZ,990	BMP 2 COVERAGE STATUS SUMMARY: Water supplier is mesting coverage requirements for this BMP																		
Reported as of 10,	sriod:	a for BMP	shacked prior to	onstructed	2	urahon > 755/2 YES	YES	YES	YES								P. Coverage Raio > 10% NO	IP Coverage Rate > 10%	
Reported as of 10,	BMP 02 Coverage: Residential Plumbing Retrofit Repring Visit. Repring Plumbing County Repring Plumbing County Repring Plumbing County Repring Requirement Resemption Repring Requirement Very Very	An agency must meet one of three conditions to salisty strict compliance for BMP 2.	Coudings 1: The approy has demonstrated that 19% of 5F accounts and 75% of the units constructed prior to 19% as a risk of the first proportional and the construction of the constructio	us distance with the globe containing in the date for the applying these means. The containing the containing in the containing in the containing the conta	Shajh-Family Mutt-Eamily	SY2 Reported Saturation Salura 91.00%		90.00%	90.00%	San Fancesco PUC - Retail has ordination	Topological parameters of the control of the contro	YES	YES	YES	YES		1952-59 FOUR SIGNATURE DE SINGNETION SE CONTIGUE PARTIE PA	Musting Hum, Stroomhauds Distributed to Musting Mills American Musting Mills Command Mills Mills Mills American Musting Mills American Mills American Mills Mills American Mills Mills American Mills Americ	

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Page 6 of 19 Reported as of 10

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BMP 11 Coverage: Conservation Pricing

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ments for this 13MP Wafer supplier is meeting coverage requir BMF 11 COVERAGE STATUS SUMMARY:

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Reporting Period: BMP 12 Coverage: Conservation Coordinator MOU Exhibit 1 Coverage Requirement San Francisco PUC - Retail Reporting Unit:

Agency indicated "at least as effective as" Implementation during report period?

Agency shall staff and meintein the position of conservation coordinator and provide support staff as necessary.

Test for Compliance

Total Staff on Team (not, CC)	2	2	20	2	2	2
Censervation Goordinator Position Staffed?	YES	YES	YES	YES	YES	YES
Report Period	00-66	00-66	01.02	01-02	03.04	03-04
Report Year	1999	2000	2001	2002	2003	2004

Water supplier is meeting coverage requirements for this BMP. BMP 12 COVERAGE STATUS SUMMARY:

BMP 13 Coverage: Water Waste Prohibition

Reporting Period: MOU Exhibit 1 Coverage Requirement San Francisco PUC - Retail Reporting Unit:

Agency indicated "at least as effective as" implementation during report period?

An agency must meet one condition to comply with BMP 13.

Implementation metabols shall be enabling and enforcing mensures prohibing guider flooding, single prass control systems in new controllates, increase excendating systems in all new correspons can week and commercial insuly systems, and conversating descentive white fourtables.

Test for Condition 1

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2002		yes	yes	yes	y08	yes	YES
2003		yes	yes	yes	yes	yes	YES
2004		yes	yes	yes	yes	yes	YES

Water supplier is meeting coverage requirements for this BMP. BMP 13 COVERAGE STATUS SUMMARY:

http://bmp.cuwcc.org/bmp/print/printcoverageall.lasso

Reported as of 1th

BMP 14 Coverage: Realdontial ULFT Replacement Programs

MOU Exhibit 1 Coverage Requirement Roywilling Unit San Francisco PUC Ratall

A Reporting that (RES) ment most one of the following conditions to be in compliance with BMI* 14

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Status: Water supplier has not met one or more coverage requirements for

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*NOTE: Program water analysis labed no not of the plentifiers code. Savings are considered for among the program of the polymers. Forefeation and considered for moderative forms are NOT invision in the calculation. 20300.00 23889.04 2222 2222 5 2 2 2 2 2 2 2 2000 2007

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BMP 14 Coverage: Residential ULFT Replacement Programs Reporting tion San Francisco PUC - Retail

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BMP 03 Coverage: System Water Audits, Leak Detection and Repair

Reporting Period MOU Exhibit 1 Coverage Requirement San Francisco PUC Rutall

Agency, subjected the beat an effective and imples

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HART & COVERAGE STATUS SUMMARY.
Water supplier has not met one or more coverage requirements for this timp

RMP 04 Coverage: Metering with Commodity Rates for all New Connections and Retrofit of Lixisting

Reporting Parind MOU Patilbit 1 Coverage Requirement Stan Franciscos Pift: , Quintil Reporting that

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period f No my managethern coaperous bland

An agency which ha on footh to cohedit trees, of the recombined accounts within 10 years to be in compliance with ItAIF 4

tout for Compliance

No. of Unumbered Assenteds Malai Raimili Covarage an % of Base Year Unimplered Reported Henugh 2002 Intel Major Referitor in Base Year

Coverage Respirament by Year 4 of Implementalism per Exhibit 1 RU on Schodule to most 10 Year Coverage Requirement

24 11%

Water supplier is meeting onverage requirements by this GMP BMP 4 COVERAGE BEATUR BUSINARY

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Fig. 10 Groves age: Let up Laisteld cape General value of the programme of
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Page 10 of 19 Reported as of 10,

Reported as of 10,

BMP 06 Coverage: High-Efficiency Washing Machine Rebate Programs

Reporting Period: 01-02 MOU Exhibit 1 Coverage Requirement Reporting Unit: San Francisco PUC - Retail

An agency must meet one condition to comply with BMP 6

Agancy indicated "at least as effective as" imple period?

Condition 1: Office a cost-effective financial incestive for high-efficiency washins if one or provides in service area ofter financial incestives for high-efficiency washins.

Test for Condition 1

No. Figures The commencement Reservation Processor <	۱	l				1
99-00 1 1 VES	Year	Report	BMP 6 implementson Year	Robele Offered by ESP?	Rabete Offered by RU?	8.8
99-00 2 YES	666	99-00	-	YES	YES	_
01-0.2 3 YES	000	00-66	2	YES	YES	-
0.04-2 4 YES	100	01-02	9	YES	YES	-
0.00-04 6 YES	005	01-02	4	YES	YES	_
0.004 6 YES YES 9 FES 9	003	03-04	\$	YES	YES	-
Property December Property	1004	03-04	9	YES	YES	-
99-00 1 271 99-00 2 209 01-02 3 115 01-02 4 384 03-04 5 538	Your	Report	BMP 6 Implementation Year	No Rebutes Asserded	Сомесада	Mot
99-00 2 209 01-02 3 115 01-02 4 5364 03-04 6 729	666	99-00	-	271	YES	
01-02 3 115 01-02 4 384 03-04 5 538 03-04 6 729	000	99-00	2	209	YES	
01-02 4 364 03-04 5 538 03-04 6 729	100	01-02	6	115	YE	
03-04 5 538 03-04 6 729	000	01-02	4	364	YES	
03-04 6 729	003	03-04	2	538	YES	
	900	03-04	9	729	YES	

S.00 5.00 5.00 5.00 5.00 5.00

BMP 6 COVERAGE STATUS SUMMARY: Water supplier is meeting coverage requirements for this BMP.

Reporting Period BMP 07 Coverage: Public Information Programs Reporting Unit.

San Francisco PUC - Retail

MOU Exhibit 1 Coverage Requirement Agency indicated "et leest as period? An agency must meet one condition to comply with BMP 7

Test for Condition 1

Year	Report Period	BMP 7 Implementation Year	RU Has Public lobers
1999	00-66	2	YES
2000	99-00	ю	YES
2001	01-02	4	YES
2002	01-02	Ω	YES
2003	03-04	9	YES
			-

Water supplier is meeting coverage requirements for this BMP. BMP 7 COVERAGE STATUS SUMMARY:

10/6/2005

Reported as of 10,

Reporting Period: BMP 08 Coverage: School Education Programs MOU Exhibit 1 Coverage Requirement San Francisco PUC - Retail No exemption request filed Reporting Unit:

An agency must meet one condition to comply with BMP 8.

Agency indicated "at least as effective as" implementation during report period?

ş

Condition 1: Implement and maintain a school education program consistent with BMP 8's definition.

Test for Condition 1

Year	Report Pened	BMP 8 Implementation Year	Ru Has School E. Program?
1999	00-66	2	YES
2000	00-66	8	YES
2001	01-02	4	YES
2002	01-02	ю	YES
2003	03-04	9	YES

Water supplier is meeting coverage requirements for this BMP. BMP 8 COVERAGE STATUS SUMMARY:

03-04

YES

3MP 09 Coverage: Conservation Programs for CII Accounts Reporting Period MOU Exhibit 1 Coverage Requirement San Francisco PUC - Retail Reporting Unit:

Agency indicated "at least as effective as" implementation during report period? No exemption requestified

Yes

An agency must meet three conditions to comply with BMP 9.

Condition 2/s): Agency is on test to survey 10% of commercial accounts, 10% of industrial accounts, and 10% of institutional accounts within 10 years of date implementation to commerce. Condition 1: Agency has identified and ranked by use commercial, industrial, and institutional accounts

othon 2(b): Agmoy is on tack to reduce OII water use by an emount equal to 16% of beseine use within wats of date implementation to commence. dition 2(c): Agency is on track to meet the combined target as described in Exhibit 1 BMP 9

Test for Condition 1

Ranked Inst. Use YES YES YES Ranked Ind. Use YES YES Ranked Com. TES TES BMP 9 Inmentsh Year Test for Condition 2a Year Report 00-66 6661 2000 99-00 2001 01-02 2002 01-02 2003 03-04 2004 03-04

Industrial Institutional 7.0% 2.4% YES 20 719 23.5% 119 2.4% YES Commercial 10,926 10,926 21,057 51.9% 2.4% YES Credit for Surveys Completed Prior to Implementation of Reporting Databases Coverage Requirement by Year 4 of Implementation per Exhibit 1 Total Completed Surveys Reported through 2002 RU Survey Coverage as % of Base RU on Schedule to Meet 10 Year CII Accounts in Base Year Coverage Requirement Test for Condition 2a Year CII Accounts Total + Credit

Performance

10/6/2005

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Page 13 of 19	
CUWCC Print All	

99-00 99-00	Implementation Year 1	Target Savings (AF/n) 259 264	Contraga Contraga 0.8% 0.9%	Centrago Centrago Roquiestrent 0.5% 1.0%	2
02	3			1.7%	
02	4			2.4%	
ö	s			3.3%	
ģ	9			4.2%	Q

Test for Condition 2c	
Total BMP 9 Surveys + Credit	11,12
BMP 9 Survey Coverage	50.89
BMP 9 Performance Target Coverage	
BMP 9 Survey + Performance Target Coverage	50.89
Combined Coverage Equals or Exceeds Coverage	YES

Water supplier is meeting coverage requirements for this BMP. BMP 9 COVERAGE STATUS SUMMARY:

Page 14 of 19 Reported as of 10,

3MP 11 Coverage: Conservation Pricing Reporting Unit

Reporting Period 01-02 MOU Exhibit 1 Coverage Requirement Agency indicated "et taxst as affective as San Francisco PUC - Retail

An agency must meet one condition to comply with BMP 11

Uniquency shall meetan raw structs a consuler with BMP 11's definition of conservation proxy Uniqueneste materials with sail as which as a which are several processing proxy and adopting conservageting for against a supplying blow material and were service. This BMP applies to proxy of both conservageting of personal proxy proxy blow materials and service services as the assignment of the blow and with will serve applicate to DMI blook serve applicate about conservation proxy by server announce.

construction of the control of the c

Ol Commente group groupes across the control motion and make the control motion and contr

Test for Condition 1

Cookinge Regulation YES YES YES YES RU Employed Non Conserving Rate Structure 999999 Report Period 00-66 99-00 01-02 01-02 03-04 2000 2002

Water supplier is meeting coverage requirements for this BMP. BMP 11 COVERAGE STATUS SUMMARY:

10/6/2005

http://bmp.cuwcc.org/bmp/print/printcoverageall.lasso

Reported as of 10,

BMP 12 Coverage: Conservation Coordinator
Reporting Unit.
Reporting Detection of Reporting Period
MOU Exhibit 1 Coverage Requirement

Agency shall staff and maintain the position of conservation coordinator and provide support staff as necessary.

ş

Againty indicated "at least as effective as" imple-

Test for Compliance

elor Total Staff on Team find, GC)	2	ın	2	ı,	2	S
Conservation Coordinator Postbon Staffed?	YES	YES	YES	YES	YES	YES
Report Period	99-00	00-66	01-02	01-02	03-04	03-04
Report Year	1999	2000	2001	2002	2003	2004

BMP 12 COVERAGE STATUS SUMMARY: Water supplier is meeting coverage requirements for this BMP.

Reported as of 10,

BMP 13 Coverage: Water Waste Prohibition
Reposing Per
Reputing Per
Rep

Agency indicated "at least as effective as" implementation during report period?

You

An agency must meet one condition to comply with BMP 13.

implementation methods shall be enseting and enfocing measures prohibiting galler flooding, whige perstering by spleam in new controllerum, novementellerum gallerum in all new conveyar on wesh and commarcial losardy systems, end nove-flooding discessive water fourtains.

Test for Condition 1

		4	gency or a	ervice are	a pronibits		
Year	Guther	Strate-Pess Cooling Systems	Single-Priss Car Wash	Sirgin-Pers Laundry	Single-Pass Foundant	Офи	RU has ordinance th meets cororaga requirement
1999	yes	yes	sak	on Oi	yes	yes	Q.
2000	yes	yes	yes	92	yes	yes	ON
2001	yes	yes	yes	92	yes	yes	ON
2002	yes	yes	yes	yes	уез	yes	YES
2003	yes	yes	yes	yes	yes	yes	YES
2004	yes	yes	yes	yes	yes	yes	YES

BMP 13 COVERAGE STATUS SUMMARY: Water supplier has not met one or more coverage requirements for this BMP.

10/6/2005

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Roparied an of 10.

BMP 14 Coverage: Residential ULFT Replacement Programs

MOU Exhibit 1 Coverage Requirement Reporting Unit: San Francisco PUC - Retail

A Reporting Hull (RUL) meat meet one of the following conditions to be in compliance with BMP. 14

Coulding 1. Rehold payenside (RERR) redustron in effect in earlice area

centrien 2. Water aparaga fears folial replacement programs ospeat to IROS, of Establi B coverage impasement No regimeny with one extensitions for IMMP 14 in and experient to ment cann of the interver constitutes. Shis expositional interversity with contention to the content of t

of constitution with 1960 54

Status: Water supplier has not net one or more coverage requirements for Tolled pisoement Progress iss Savings* (AF) this BMP, as of 2004

Replacement Progress Wefer Savings*								
Exhibit 6 Ceretogo forcint (AE)	644 89	1846.53	3533 00	6632.23	8082.17	10829.02	13624.12	17024.18
ROR Ordinance in Effect		Š	S.	o Z	S.	e N	Š.	Š.
Exemption filed with CUMCC		No	No	ON	No	No	No	N _o
IMP 14 Date flubrattled to CUMCC	ON	Yes	Yes	Yes	Yos	Yes	Yas	No
Coverage	1988	1989	2000	2001	2002	2003	2004	2005

*NOTE: Program water assings liabed as o not of the plumbing code. Savings as cumulative tool annual; believes 1991 and the given year. Residentian The count date from unsubmitted forms are NOT included in the calculation. 23689.94 2 2 S S 9 S 2006

20390.80

Water supplier has not unet one or more coverage requirements for this BMP. BMP 14 COVERAGE STATUS SUMMARY:

BMP 14 Coverage: Residential ULFT Replacement Programs

BMP 14 Coverage Calculation Detail: Retrofit on Resale (ROR) Ordinance Reporting Unit San Francisco PUC - Retail Water Savings

Average Estimate Average Average Average Single Coverage	rate of ne	TOTAL PROPERTY OF STREET							
Average Average Average Average Average Single Coverage	2000	tural re	placeme	Average rate of natural replacement (% of remaining stock)	remaining	g stock)		3	8
Average Average Average Average Single Serverage	Average rate of housing demolition (% of remining atock)	fuelng	demolitie	on (% of r	emining	stock)		900	900
Average Average Average Single Coverage Year	Estimated Housing Units with 3.5+ gpf Tollets in 1997	g Units	with 3.5	+ gpf Toll	lets in 19.	26		86015 15	182009 43
Average Average Average Single Coverage Year	Average resale rate							0004	0498
Average Average Single Coverage Year	Average persons per unit	ner unit							
Single Coverage Year	Average tollets per unit	r anit							
Single	Average eavings per home (gpd; from Exhibit 6)	ner horr.	(pdf) e	from Exh	ibit 6)			42.7	39 6
Coverage	Single Family Housing Units	lousin	g Units						
	Coverage Uncetcoffiled Houses Year Houses Sold	House	Houses	fold and Retrofitied	Sold and Already Retrofitted	Bold and Unesid Already and Retrofitied Retroffted	Gross HOR Sevings (AV Y)	Raplecement Only Servings UAT)	Berings (AT)
1509	77116 21 5662 85	9682.85	19902.22	5662.85		3196 09	1350.80	1084 90	280.80
1000	69173 80	565443	19562.71	9016 24	458 20	23856 17	1731 58	1247 10	484 48
2000	52 52 020	81 9699	79105 20	4570.17	1055 99	2570 35	2073 06	1300 04	675 02
2001	60629.91	559603	7870987	4018 42	1499.61	2304 99	2379 29	1942.00	63631
2002	49887 50	8570 04	7831813	36.75 36	1844 55	2087.06	2053.91	1682 15	971 78
2003	44737.85	6542 19	77924 54	3295 97	2246 22	1853 88	2900 18	1816 78	1084 40
2004	40119,77 5514 48	6514 48	77534 92	29% 74	2958 74	1662.34	3121.03	1944 09	1176 94
2005	35978.40 5488.91	540.01	77147.25	2610 83	283827	1490 /4	3319 09	2067.29	1251 79
5006	32264 52	545947	76761 51	2317 02	3062 45	1336 68	34'00 69	2165 60	1311 10
2007	29934 00	5432 16	76377 70	2131.65	3300 92	1196.86	3055.97	2269 19	13% 78
Multi	Multi Family Housing Units	guisna	Units						
Coverage	Coverege Unrekofitted Houses Year Houses Bold	House	Houses	floid and Retrofitted	Sold and Alvedy Retrofilled	Sold and Unsold Gross ROR R. Aleady and ROR R. Retrofiled Retroffled Sevings (AFY)	Gross ROR Savings (AFY)	Replecement Only Savings (ATT)	Sevings WY1)
1408	180107.46	9018,75	180107.46 9018.75 172089.84	9018.75		6883.23	2522 80	2138.81	363.99
9999	151904 02 8073 88	8073.88	171220 23	8230,79	742.67	6281.65	3168.45	2447.30	719 15
2000	138350 14 8928 79	8028 79	17036413	7511 06	1417 11	5733 01	3753.88	2743 55	1010 35
2003	126242.63 6894.14	8894.14	189512.31	68.026.39	2028 75	6232 12	4289 96	9027.94	1262 02
2002	115231 20 8839 72	9839 72	198664 75	6276 44	2583.28	4775 00	4779.21	3301 04	1478 17
2003	105163.57 8785.52	8785 52	18/82143	6709.82	3045 70	4357.81	5225 72	3583.27	1662 45
2004	9397556	93975 54 8751 95	106962 32	5210 96	3540 69	3977.07	563322	3815.07	1818 15
5002	87590.25	8707.79	87590,25 5707,79 163147.41	4755 88	3932.10	3979.00	6005.12	4056.85	1948 27
2006	76037 58	8064.25	79037 58 8084 25 165316.67	4340.18	4324 07	3312 48	1312 48 8344 52	4289 00	2005 52

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Page 2 of 25	Reported as of 10.	Reported as of 10.	10/6/2005
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		Jnme	
		Submitted to CUWCC 0.007/2005 772700 77270 77270 77270 77270 77270 77270 772 772	
		C. C. Retail to the county and water cou	lasso
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Page 1 of 25	Reported as of 10,	Year. 2004 Supply Type Important Circopered Circopered Lecal Water sheet	10/6/2005
CUWCC Print All		Water Supply & Reuse Rayner Supply & Reuse Rayner Supply Source Information Water Supply Source Name Respiratory Source Name R	http://bmp.cuwce.org/bmp/print/printall.lasso

CUWCC Phint All Page 4 of 25	b. Describe how your agency tracks this informetion.	The allog spring manages us to track number and type of impaction as well as retwork comments comment comment comments. C. Water Survey Program Expenditures This Year Next Year 1, Budgined Expenditures 1, Budgined Expend	2. Actual Expenditures 195700 D. "At Least As Effective As"	1. is your AGENCY implementing an "et least as effective es". No variant of this BMP?	a. If TES, please explain in obtain now your implementation of this blair differs from Exhibit 1 and why you consider it to be "et least as effective	285. The asserting priority recovered evolv score 4000 of the market feet and detect.	in average single-tailing account unit uses 10% of its water for outcoor irrigation. Most multismity accounts do not have any outdoor water use due to the foreign of the City.	E. Comments	While we parform them as neossary, the SFPUC's residential audit program fourses habyly on indoor to a Landscape use is relatively fow in San Empressor in the a societar of resources included relative since the societar of resources and the societar of resources included relative situation.	and density. The staffing expenditures are somewhat estimated because	we have two full lime inspectors end one staff who deats about .50FTE with eudit-related administration. Finally, program ectivity fell this year	because of a fairly time consuming office move and an 8 month gap without a consumation administrator. The move and an 8 month gap	was estimated based in the response rate (usually about 10%), we did not	Collect the modification at that units.											http://bmp.cuwcc.org/bmp/print/printall.lasso
Page 3 of 25	Reported as of 10,	and Year. 2004	12/10/1993	yes	12/11/1991	yas	12/11/1991		Multi-Family Units	2000	633		yes	yes	yes		ОП	yes	yes	01	Odometer Wheel	yes	yes	database	10/6/2005
		mers BMP Form Status: 100% Complete		argeting/ vater use		argeting/ ster use	=	i	Single Mu Family Accounts	18000	1727		yes	yes	yes		yes	yes	yes	2	Odome	yes	yes		
CUWCC Print All		BMP 01: Water Survey Programs for Single-Family and Multi-Family Residential Customers: Reporting Unit: Reporting Unit: Responsing Unit: Responsing Unit: Responsing Unit: 100% Complete 2004 A Immiematistical	1. Based on your signed MOU date, 12/11/1991, your Agency STRATEGY DUE DATE is:	 Has your agency developed and implemented a targeting/ marketing strategy for SINGLE-FAMILY residential water use surveys? 	a. If YES, when was it implemented?	 Has your agency developed and implemented a targeting/ markeling strategy for MULTI-FAMILY residential water use 	a. If YES, when was it implemented?	B. Water Survey Data	Survey Counts:	1. Number of surveys offered:	2. Number of surveys completed:	Indoor Survey:	 Check for leaks, including foliets, faucets and meter checks 	 Check showerhead flow rates, aerator flow rates, and offer to replace or recommend replacement, if necessary 	 Check tollet flow rates and offer to install or recommend ristallation of displacement device or direct customer to ULFT replacement program, as necessary; replace leaking tollet flepper, as necessary. 	Outdoor Survey:	6. Check irrigation system and timers	7. Review or develop customer irrigation schedule	 Measure landscaped area (Recommended but not required for surveys) 	 Measure total irrigable area (Recommended but not required for surveys) 	 Which measurement method is typically used (Recommended but not required for surveys) 	 Were customers provided with information packets that included evaluation results and water savings recommendations? 	 Have the number of surveys offered and completed, survey results, and survey costs been tracked? 	a. If yes, in what form are surveys tracked?	http://bmp.cuwcc.org/bmp/print/printall.lasso

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Raportad as of 10,

BMP 02: Residential Plumbing Retrofit

2004 BMP Form Stalus: 100% Complete San Francisco PUC - Retail A. Implementation Reporting Unit:

 Is there an enforceable ordinance in effect in your service area requiring replacement of high-flow showerheads and other weter use fixtures with their low-flow counterparts? e. If YES, list local jurisdictions in your service area and code or

ordinance in each;

City and County of San Francisco Ordinance 185-91 for Mutilfamily Ordinance 346-91 for Single-Family

yes %06 %06 4. Has your agency satisfied the 75% saturation requirement for multi-family housing units? 2 Has your agency sellsfied the 75% seturation requirement for 3. Estimated percant of single-family households with low-flow 5. Estimated percent of multi-family households with low-flow single-family housing units? showerheads:

The City and County of San Francisco requires that all owners of

If YES to 2 OR 4 above, please describe how saturation was dete-including the dates and results of any survey research.

propely in San Francisco must life a conservation efficievit lessifying that low-flow showetneeds have been installed in order to get the lower water rate. Subsequent inspections have found that this data is correct. Those who do not retrical their homes, gate a rate that 15 5 cents per cot higher. that have filed affidavits and have not filed affidavits are updated by our than those who have retrofitted their homes. The number of accounts

B. Low-Flow Device Distribution Information billing system on a monthly basis.

2 Has your agency developed a tergeting/ marketing strategy for distributing low-flow devices? If YES, when did your egency begin implementing this strategy?

Describe your targeting/ marketing strategy

Those who have installed showerheads using not more than 2.5 gallons per minute and earstors with restrictors on their faucets get the rate of \$1.49 per ccf. Those who do not install low-flow showerheads and have found that this rate attractive has malk-aided our retail customers to retard their branes and buildings. Also, the conservation inspectors distribute deviews south as few flow altowerheads and enestics during their will kenaguis as member. Charamers may also all not equest these devices. Unfortunately, willer we keep the devices stacked, willer we keep the devices stacked, when the second our expension of the control serators with restrictors on their faucets get a rate of \$2.24 per ccf. We

SF Accounts 0 2. Number of low-flow showerheads distributed: Low-Flow Devices Distributed/ Installed 3. Number of tollet-displacement devices don't track their distribution.

MF Units

0

http://bmp.cuwcc.org/bmp/print/printall.lasso

10/6/2005

6 Does your agancy track the distribution and cost of low flow devices? b. If yes. describe your tracking and distribution system a If YES, in what format are low-flow 5. Number of faucet aarators distributed 4. Number of toilet flappers distributed Sevices tracked?

The affidawits are recorded on the customer's electronic record on the SFPUC/SFWD's billing mainframe system. Also, a constant supply of devices is stocked in house for distribution.

C. Low-Flow Device Distribution Expenditures

This Year

1. Is your AGENCY Implementing on "of least as affective as" verient D. "At Least As Effective As" 2. Actual Expanditures of this BMP?

1. Budgatad Expanditures

Vass

a. If YES, please explain in detail how your implamentation of this BMP differs from Exhibit 1 and why you consider it to be "et least as effective

We incentificate deaths on application of the properties of the present of the prese

retrofit their homes and buildings. E. Comments

Page 8 of 25	Reported as of fO		you	2		0	9		90 °	ino.	9	nex		5.	10/6/2007
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BMP 01: Water Survey Programs for Single-Family and Multi-Family Residential Custonners Reporting Unit Temes BMP Form States: Year San Fandsco PUC - Retail 100% Complete 2009	y and Year: 2003	The billing system allows us to brack number and type of imperition as well as independent of the system of the sy
A. Implementation 1. Based on your signed MOU date, 12/11/1991, your Agency STRATEGY DUE DATE is:	12/10/1993	195700
 Has your agency developed and implemented a targeting/ marketing strategy for SINGLE-FAMILY residential weter use survays? 	yas	D. "At Least As Effective As" I sharm you factory mystementing an "ot least as effective as" variant out factory mystementing an "ot least as effective as" ho
If YES, whon was it implemented? Has your against developed and implamented a tarpating marketing strategy for MULTHFAMILY residential weter usa	12/11/1991 yes	 at YES, please explain in detail frow your implementation of the BMP defines from Exhibit 1 and why you consided it to be 'ai least as effective a."
survays? a. if YES, when was it implemented? B. Water Survey Data	12/11/1991	The average single-family account only uses 10% of its waier for outdoor impater. Most meltiturily accounts do not have any outdoor water use due to the density of the City.
Survey Counts: Family Accounts	Motti-Family Units	E. Comments While we parform them as necessary, the SFPUC's residental audit
1. Number of surveys offerad: 14000	7566	program rocesses resortly of introor use. Landscape use is riliatively low in San Francisco due to a variety of geographic reasons including climate
2. Numbar of surveys completed: 1325	788	and density. The statting numbers are somewhat estimated. The SF surveys offered value was estimated based on the response rate (usually
Indoor Survey: 3. Check for leaks, including tollets, faucets and yas maker checkers.	yas	about 10%).
4. Check showerhead flow rates, aerator flow rates, yes and offer to raplace or recommend replacement, if necessary	yes	
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6. Check irrigation system and timers yes	92	
7. Reviaw or develop customer trigation schedule	yes	
Measure landscaped erea (Recommended but yes not required for surveys)	yes	
Measura total irrigable area (Recommended but not required for surveys)	92	
method is typically used equired for surveys)	Odometer Whaal	
Worza customers provided with information packets that included evaluation results and water savings recommendations?	yes	
12. Have the number of surveys offered and yes completed, survey results, and survey costs been creeded?	yes	
a, if yas, in what form are surveys tracked?	database	
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BMP 02 Residential Plumbing Report

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BMP 96: High-Liffelency Washing Machine Robate Programs

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B. Rebate Program Expenditures.

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BMP 07: Public Information Programs

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San Francisco PUC - Retail	100% Complete	2003
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Page 13 of 25	Reported as of 10,		yes	No. of teachers' workshops	0	08	- 0	2 99	1/1/1986		Next Year 24000	2	is BMP affocilive	the and	toti suur 003-2004 s noil	
Page	Repo	rear: 2003	ä								-		= 40	Š	d do s	
Page	Repo	BMP 08: School Education Programs Reporting Unit: BMP Form Status: Year: San Francisco PUC - Retail 100% Complete 2003 A. Implementation	1.Has your agency implemented a school information program to promote water conservation? 2. Please provide information on your school programs (by grade level):	Are grade- No. of cless No. of management of clean and clean students teem meteries reached wor distributed?	yes 5 150	yss 75 4015	yes 0 1050	omega established established	July your Agency a mercentage meet state outdoorder in american regularements? When did your Agency begin implementing this program?	B. School Education Program Expenditures	1. Budgeted Expenditures 24000	2. "At Least As Effective As" 1. Is your AGENCY implementing an "et least as effective es"	of this BMP? a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective	88. 18nts: Antenda and water of extrod arcerams includen: water wise a nester and	bumper alleber content cotoring book, etc. Some were eliminated due to be appealed cuts. If the cotoring book, etc. Some were eliminated due to because the program administrator his changed sand there does not because the program administrator his changed sand there does not the cotoring to be much taking. We estaured that edively had not changed from the previous year.	

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Option B. CH Conservation Program Largeta

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BMP 09a: Cli ULT Water Savings

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Reported as of 10,

 Allow local agencies, including municipalities and special districts, to set more stringent standards and/or to ban onsite regeneration of water softeners if it is demonstrated and found by the agency governing board that there is an adverse effect on the reclaimed water or groundwater

yes 2

Does your agency include water softener checks in home water audit programs?

Does your agency include information about DIR and exchange-type water softeners in educational efforts to encourage replacement of less efficient timer models? C. Water Waste Prohibition Program Expenditures

Next Year

This Year

0 1. Is your AGENCY implementing an "at least as effective as" D. "At Least As Effective As" 1. Budgeted Expenditures 2. Actual Expenditures

If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective

variant of this BMP?

E. Comments

San Francisco has very soft water. So very few of our customers have soft water conditioners. The enforcement of the waste Water ordinance is done by the SCS water Conservation's Field Service Inspectors. They do the enforcement along with the audits for BMF#1 and BMF#6.

BMP 14: Residential ULFT Replacement Programs BMP Form Status: Reporting Unit:

- Retail	100% Complete	2003
A. Implementation		
	Single-Family Multi-Family Accounts Units	Multi-Family Units
 Does your Agency have program(s) for replacing high-water-using toilets with ultra-low flush toilets? 	yes	yes
Number of Toilets Replaced by Agency Program During Report Year	gram During Repor	t Year
Replacement Method	SF Accounts MF Units	MF Units
2. Rebate	289	991
3. Direct Install	0	0
4. CBO Distribution	0	0
5. Other	2114	1073

Describe your agency's ULFT program for single-family reside

2064

2403 Total owners are also eligible to purchase the tollets for only \$10 but few have opted to join this program. The sales are staffed by SFPUC staff as well

7. Describe your agency's ULFT program for multi-family residences.

as local youth groups who recieve payment per number of tollets sold.

In the fall, we offer a related or up to SSQ por loist (the cost of the belot lead) if the customs explains for the rebase PRIOR to porchasting the loist. We also sell Universal Acude Tolles for only \$10 at state during the spring has been to low regular many examinations conformed who have already find a conservation affacts alrowing that they have already related to swolder proceedings are assured with regular all acudes. The sales are stated by \$PCUC states awas seen synchronic con-8. Is a toilet retrofit on resale ordinance in effect for your service groups who recieve payment per number of toilets sold.

9. List local jurisdictions in your service area in the left box and ordinance citations in each jurisdiction in the right box:

B. Residential ULFT Program Expenditures

	This Year	Next Year
1. Budgeted Expenditures	446428	321000
2. Actual Expenditures	446428	
C. "At Least As Effective As"		

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		A Service Area Papulation Information 1 total service area population 74400 18 Number of Accounts and Water Deliveries (AT)	on briormedien: tos 74468 and Water Deliver	(AF)		
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BMP 91: Water Survey Programs for Single Family and Multi-family Residential Customers	nly and	SEFER OF A FORE A 1880 of systems allower specific fields for the ecoelastical
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City and County of Bon Francisco Orthownse 10h H for Modificantly Orthownse 346 O for Shipto Femily	e Hils of he Madein	Allo
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a if YUS, when did you again; y bagin implamenting this to Describe year tragelling/ marketing straining Meridany?

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Fage 8 of 2)	Reported as of ft	sting Rates for all New sting RAP Form Status: Year 100% Complete 2002	new connections and bill yes	trofiling estelling of class? of case 7 still and bit by volume of completed 7	The City and County of Sun Prairition has been fully material steen 1910. On the previously uniquitient increasing fined with melenn On the previously uniquitient increasing fined with melenn On the property part.	constituted in classifility distriby transmission into provide incomplexity of the part of the control of the c	RBB RBB TRabers reportified with 2	Ures This Year Next Year		ou AARTH XV topinomenting an' na banet an entercheo ma' vortrast MARTH XV S., quiene requisit in chefait leves your reprisementation to their MAY a TVV S., quiene requisit in chefait leves your reprisementation to their MAY fullion from Evident I and sky you exception if to the "all level as efficielies as".	The property of the property o		IN 6. 200
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Page 7 of 25	Reported as of 10.	kepair Year: 2002	ou.	98423	yes	S		1750	Year	0 0	tvo tvo		Hunchans
CUWCC Fraid All		BMP 03: System Water Audits, Leak Defection and Repair Payoring Unit: BMP Form Status: Year- San Francisco UC. Retail 100% Complete 2002 A. Implementation	 this year agency conyideled a pre-screening system audit for this impuriting year. WYES, anter the volume (AFP/ear) benefit or include ventilable one as a 	percent of total protection: a Distortion on the control of the C	Variational broads Long Stepsky is < 0.9 them as feed scratin system neath is required. 3. Does your injurity leading increasing states on this to verify the values covert) or certifies withful in was a sy memor of that preferations? A Tall your agreey comprise the above and the preferation of the system.	young? 5. Does your regions you indicate to know excessed of andir results or the Compelent AWWA andil worksheets for the compelent anality of Does you improve younges a region in self-indicate programm or at your, description for least elementary concerns.	Underformation; our ID situation Dold-front to-a discussional rate land characteristic program Wor and you and the man-deaded and could varied insiderity that research overlate, proproceed, and the characteristic and the lands of the country o		renditure This Ye	1. Introduced Functioning 2. Action Expression 3. Action Expression 4. On the past An Effective An" 6. On the past An Effective An Annual An Effective An Annual An International Annual Ann	a. If Ye's leaves explain to their two you's representation of the DAP difference of their part strategy and their part strategy in their man effective manner. E. Communities		http://hongr.cu/wee.org/burg/print/print/linuo

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yes	9	stal Amount	Awarded	0	0	0	ž		n and each	ad to mer	8	yes	yes	9	yes		Next Year	9265			yes	This BMP	s effective		are		though we	so deb os			
~	ss to improve	Budget Number Awarded Total Amount			0	0	iency information to		ito our mainframe syste	erer mey used as oppos	r facilities?		Hon metering?	lart of the irrigation	nd of the irrigation	Expenditures	This Year	9242	9242		st es effective es"	v your implementation o	nsider it to be "et least e		med indoors, all rebates se.		gramming glinch. Even	o. COVICE Wes disable			
3. Do you offer landscape irrigation training?	 Does your agency offer financial incentives to improve landscape water use efficiency? 	Type of Financial Budget		a. Rebates 0	b. Loens 0	c. Grants 0	 Do you provide landscape water use efficiency information to new customers and customers changing services? 	a. If YES, describe below:	Yes, all of the surveys are entered onto our mainfrome system and each	year, we get a report off flow flucti word first used as opposed to their budget.	Bo you have irrigated landscaping at your facilities?	a. If yes, is it water-efficient?	b. If yes, does it have dedicated impation metering?	 Do you provide customer notices at the start of the irrigation season? 	Do you provide customer notices at the end of the irrigation season?	D. Landscape Conservation Program Expenditures		1. Budgeled Expenditures	2. Actual Expenditures	E. "At Least As Effective As"	 Is your ACENCY implementing an "et leest es effective es" variont of this BMP? 	e. If YES, please explain in detail how your implementation of this BMP	differs from Exhibit 1 and why you cor		Because 90% of SF's water is consumed indoors, all rebates are centered on reducing interior water use.	F. Comments	There appears to be some sort of programming glinch. Even though we	locate the problem.			
Reported as of 10s	s and		Year	2002		1158	1158	8137	2926	yes		yes		11/1/1986		96	n again.	237	ur survey.	yes	yos	QL QL	yes	yes	yes	yes	500		yes		604
	BMP 05: Large Landscape Conservation Programs and		BMP Form Status:	100% Complete		1. Number of Dedicated Irrigation Melor Accounts:	 Number of Dedicated Imagina Meter Accounts with Weter Budgots: 	 Budgeted Use for irrigation Meter Accounts with Water Budgets (AF): 	 Actual Use for Irrigation Meter Accounts with Weter Budgets (AF): 	Does your agency provide water use notices to accounts with hindreds each billing excis?		1. Has your agency developed a markeling / tergeting strategy		 a. If YES, when did your agency begin implementing this strategy? 	 b. Description of marketing / targeting strategy: 	We write to each landscape account, offering them to do a free	tatuscape eutit, it we do not reer from them, we write to them egain, ther of Survivia Offered	Completed	4. Indicate which of the following Lendscape Elements are part of your survey	Cless Communication of the Com	Mornity Analysis	c. Review / Develop Irrigation Schedules	scaps Area	Irrigable Area	f. Provide Customer Report / Information	Mers and results?	o. Lodes your against provide follow-up surveys for previously completed surveys?	ie below:	Each year, we offer surveys to all of our inrigation customers. Other BMP 5 Actions 1. An agency can provide nitrad-use accounts with ETo-based inniceops budgets in leav or a least bendicape survey program.	Does your agency provide mixed-use eccounts with lendscape budgets?	2. Number of CII nixed-use accounts with landscape budgets.
	IP 05: Large Land	Incentives	Reporting Unit:	San Francisco PUC - Retail	A Water Hea Burdoate	1. Number of Dedicated	Number of Dedicated Budgots:	 Budgeted Use for infe Budgets (AF): 	 Actual Use for Irrigalis (AF): 	 Does your agency provide budgets each billing cycle? 	B. Landscape Surveys	1. Has your agency dev.	for landscape surveys?	a. If YES, whon d stretogy?	b. Description of	We write to oach	2 Number of Survivis Offered	3. Number of Surveys Completed	4. Indicate which of the	a. Irrigation System Check	b. Distribution Uniformity Analysis	c. Review / Deve	d. Meesure Lendsceps Area	e. Messure Total Irrigable Area	f. Provide Custon	5. Do you track survey otiers and results?	completed surveys?	e. If YES, describe below:	Eech yeer, we offer C. Other BMP 5 Actions 1. An agency can provide a landscape budgets in lieu	Does your agency provided budgets?	2. Number of CII mixed-

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Reported as of 10,

BMP 06: High-Efficiency Washing Machine Rebate Programs

Reporting Unit:	BMP Form Status: Ye
San Francisco PUC - Retall	100% Complete 20
A. Implementation	
Do any energy service providers or waste weter utilities in your service arms offer ratione for high-efficiency weekens?	waste weter utilities in your
a. If YES, describe the offering	a. If YES, describe the offerings and incentives as well as who the
energy/waste water utility provider is.	der is.

yes

92 02

2. Does your agency offer rebates for high-efficiency washers? PG&E offer a rebate of \$75 for a horizontal wesher. 3. What is the level of the rebate?

4. Number of rebates ewerded.

yes 75

364

This Year Next Year 37500 B. Rebate Program Expenditures 1. Budgeted Expenditures

37500 27300 1. Is your AGENCY implementing an "et leest es effective es" verient of this BMP? C. "At Least As Effective As" 2. Actual Expenditures

Since the cost of administration is absorbed into the costs of administration the baller radioals program, the SFPUC does not work with the Bay Ares utilities and PG&E, in offering a robate program. This seves us approximately \$60,000 per year. D. Comments

a if YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective

BMP 07: Public information Programs

Reported as of 10, Page 12 of 25

Year. 2002 BMP Form Status Does your agency maintain an active public information prograte promote and aducate customers about water conservation? 100% Complete San Francisco PUC - Retail A. Implementation Reporting Unit:

yes

e. If YES, describe the program and how it's organized.

The Coverentedion Section is in change of promoting the lotest and worker rabble programs are with the bit to like the lotest set to goognam. The SPEUC's Communications Section is in change of the SPEUC's with page, general contracting the prosen on general ways; for reduce writer used in strong and setting tables at various events.

2. Indicate which and how many of the following activities are included in your

public information program.

'es/No Numbar of Evants	4
Yes/No	ves
Public Information Program Activity	n. Paid Advertising

ublic Inform	Public Information Program Activity	Yes/No
9. Paid /	e. Peid Advertising	yes
b. Public	b. Public Service Announcement	yes
c. Bilt In	c. Bill Inserts / Newsletters / Brochures	yes
d. Bill sh	d. Bill showing water usage in comperison	ves
to pravic	to pravious year's usage	
O Domo	a Damonofosian Cardons	90/1

B. Conservation information Program Expenditures Program to coordinate with other government agencies, industry and public interest groups and media

9 yes

f. Special Events, Media Events

g. Speaker's Burneu

	This Year Next Y	Next Y
1. Budgeted Expenditures	45000	450
2. Actual Expenditures	45000	
C. "At Least As Effective As"		

900

 if YES, ptesse explain in detail how your umplementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective Is your AGENCY implementing an "at least as effective as" variant of this BMP?

D. Comments

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Page 11 of 25	
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Reported as of 10,

Year 2002

BMP Loror Status: 100% Complete

Reporting Unit: San Francisco PUC - Retail

BMP 08: School Education Programs

 1.04α your agency implemented a school information program to promote scatteriority effect ℓ A. Implementation

Are grade. No. of class. No. of No. of 2. Please provide internation on your action programs (by strate level).

	appropriate materials distributed?	appropriate presentations sindents feachers materials distributed?	students	students teachers reached workshop
Orades h 3rd	RuA	5.	55	
Grades 4th 6th	No.	7.0	4018	
Grades 7th-98s	Web.A	0	1050	
High School	Yes	0	1100	
1. Ohi yann Amman's materiale most state estimation framework	minis most state	make relieve frame	Array	

4. When dkt your Agency begin implementing this progrem?

B. School Education Program Expenditures

Title Next Year Year 24000 24000 24000 1 Budgeted Pspendilmen 2 Actual Expenditures

a If Vt. S. please explain in defail how your inyformentation of this flath? offices from Exhibit 1 end why you counider it to be "at least as educated. C. "At Least As Effective As" 1 is you Acid NCV injusmenting an "at least as officitive as" voriant of the BAP?

D. Comments

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Reporting Unit. San Francisco PUC - Rotati	A Implementation 1 that your agony identities and ranked COMMI REIM contempor according to use?	2. Has your agency identified and ranked INDLESTRIAN contenues according to use?	3. Hara your agoney forvilled and tonked INSTITUTIONAL

Option A: Cli Water Use Survey and Customer Incentives Program

Aon	hestitutional	2894	204	200	0	Accounts	you	yes	Yes	Total \$ Amount Awarded	0	О	0
oy and examplying with	Industrial Accounts	0	0	C	0	Industrial	yas	yan	yes	No. Awarded to Customers	0	0	0
il vator tato narv ii the prajeme of	Commercial	9	107	137	9	Communicial	yes	yen	yas	Hutget (\$/Ysai)	0	0	0
4 to your appear of our and our and our our control of contents trenthers program for the program of examplying with RMd ² D under this option?	Cli Survays	a Number of New Sinyaya Offered	b. Number of New Surveys Campbelad	 O. Namber of Sile Follow ups of Previous Surveys (willin 1 yr) 	d Number of Phone Follow ups of Previous Surveys (within 1 yr)	Cit Survay Components	e. Site Visit	f. Uveksakan of all water nating apparatas and prevanisces	g Customer report idealitying recommended alterimey measures, paphacis, and agency incuritives.	Agency Cil Customer Incantivas	h. Robaton	f. Loans	j. Grands

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D. Comments

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3. If the, let the expendituate mapping by another approxy with which year.		a If YES, describe the ordinance	
you congresses in a requestal consequently request ? 4. Parties expensely interne? Notes	_	The ordinance is counacted with the Rules and Regulations repacting water service. This allower the San Francisco Publice Commission	connecting
If your agency aupplies the conservation continuator: A. What powerful in this conservation continuator's availant?		In critically faint of If the circulations's weeker they have repeated by whether the orizinate. But it alone allows the SEPUTE to charge a few or rate auchitupe in the sevent of weter aboutage.	intedly in a fine or
b. Cocothinator'n Name Kundastlay M. Krime c. Cocothinator'n Fillia Martin Cavanayalku Antaninatalahar		2. Is a crity of the most content ordinauscie) on the whit CUVUCCP at 16th Oxid Jamelelbews in your envises a near in the literal tool lock and white videals collishers to cladions in each justifications in the executed near white videals collishers.	yes ox sod xod test
d. Coordinator's Experience and Number of 16 Years		Sounty of San	10
 Ответоби предативности предати		Honeston Hopementation B. Implementation	Nice
6 Number of conservation staff, including 6 Camervalian Coordinate:		I Indicate which of the water uses listed below are prohibited by your agency or service area	
B. Conservation Staff Program Expenditures		a Galler Booding	yen
This Year Next Year		 Single-pers caroling systems for new contractions 	yes
1. Budgalad Capentillures 432079 453067		 Non-recliculating systems to all new conveyor or car weath systems 	ynn
live As"		d. Non-recirculating systems in elt new commercial teacrity analysms.	yen
L. Is your AGUNCY Implementing on "of loast as offective as" no		ny seems a. Non racticulating systems in all now decorative founteins	yes
At 1 YES, places explain in defaul frow your templementalistion of this GMP of the second of the CMP of the second of the CMP of the second of the CMP of the second of th	_	f. Oliver, please useme Serve water only upon request	yes
CHARLES WOULD EXTEND I MINE WAY YOU CANDRING IN IN DR. OF SECTION		2. Doscrifte measures that probibil water uses listed above	
D. Comments		On the Birt whelelist, we give them a welliest male. On the second violation, they cavile as fairly existing a finish form the Nether Conservosate. Authoritischer, Carlo Re Bird Violation, Bird pag of a clause of a formation or a weeter related reference on their services than On the fourth violation. Bird make it is familied.	oud lining or a flort, live
		Water Soffeners: 3. Indicate which of the following mesouses your agency free supported in developing sints law.	
		a Allow the sale of more efficient, dement-initiated repenerating Diff models.	98
		Devokop meininam applienze efficienzy steruterde flaet 1) krateeae the requireration efficienzy stanterd to at loval 3.530 geller of bardness removed per prantit of stremon efficiency.	9
		ii.) ingakenwat an kimilikad maxanum numbor ol galions dischwgat par galion of soil water	90

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c. Allow local agencies, including municipalities and speciel dialettes, to set more stitution it and most avaidor to ban on also regeneration of water conformers if it is demonstrated and note by the segment governing board that there is an adverse effect on the seclaimed water or groundwater.

989

9 2 Does your agency include water softener checks in home water audit programs? Does your egency include information about DIR and exchange-type water softeners in educational efforts to encourage

C. Water Waste Prohibition Program Expenditures replacement of less efficient timer models?

Next Year This Year D. "At Least As Effective As" 1. Budgeted Expenditures 2. Actual Expenditures

a. If YES, please axplain in detail how your implementation of this BMP differe from Exhibit 1 and why you consider it to be "at least as effective Is your AGENCY implementing on "at least as effective as" varient of this BMP?

San Francisco has vary soft water. So very few of our customers have soft water conditioners. E. Comments The enforcement of the weste water ordinance is done by the SFPUC's Water Conservation's Fleet Sewick suspension. They do the enforcement along with the euclist for BMP #1 and BMP #5.

BMP 14: Residential ULFT Replacement Programs

Year. 2002 Mutti-Family Units Single-Family Accounts BMP Form Status: 100% Complete San Francisco PUC - Retail A. implementation Reporting Unit:

yes Does your Agancy have program(s) for replacing high-water-using tollets with ultra-low flush tollets?

SF Accounts MF Units 462 Number of Tollets Replaced by Agency Program During Report Year Replacament Method

1570 308 0 ۰ 4. CBO Distribution 3. Direct Install 2. Rebsto

2410

6. Describe your agency's ULFT program for single-family residences.

1878

Total

The spring. That is open to both study formly and resulting cardiominal valued for the spring that they have intensity filed a conservation difficult showing that they have intensity results of the five Movement of the spring a self-resistant or all aments and restriction so with restriction so makes the spring that the spring that the spring In the fall, wa offer a rebate of up to \$50 per tollet (the cost of the tollet leaft) if the customer applies for the rebate PRIOR to purchasing the tollet. We also sell Universal Randle Tollats for only \$10 at sales during

7. Dascribe your agency's ULFT program for multi-family residences.

in the fill, when he method to the SSE part better the cools for being the stage of the continuous properties of the related PREME to precribing the treated by an another properties of the related PREME to precribing the treated properties of the continuous properties of the properties of the treated properties of the properties of the properties of the properties of the who to have indeed the treated properties of the properties of the properties of the aniestry implied to two through the properties and according which relations on

9 List focal jurisdictions in your service size in the left box and ordinance citations in each jurisdiction in the right box. 6. Is a tollet retrofit on resale ordinance in effect for your service

B. Residential ULFT Program Expenditures

Noxt Year

This Year 434890

446428

C. "At Least As Effective As" 1 Budgeled Expenditures 2 Actual Expenditures

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BMP 01: Water Survey Programs for Single-Family and Multi-Family Residential Customers

12/10/1993 BMP Form Status: 100% Complete Based on your signed MOU date, 12/11/1991, your Agency STRATEGY DUE DATE is: Has your agency developed and implemented a targeting/ marketing strategy for SINGLE-FAMILY residential water use San Francisco PUC - Retail A. Implementation Reporting Unit:

yes Ves

12/11/1991 Has your agency developed and implemented a targeting/ marketing strategy for MULTI-FAMILY residential water use a. If YES, when was it implemented?

a. If YES, when was it implemented?

12/11/1991

B. Water Survey Data

Single Multi-Family Family 17095 6035 yes Accounts 3. Check for leaks, including toilets, faucets and 2. Number of surveys completed. 1. Number of surveys offered. Survey Counts: Indoor Survey:

Units

13014

yes yes yes

yes yes 4. Check showerhead flow rates, aerator flow rates. and offer to replace or recommend replacement, if 5. Check toilet flow rates and offer to install or recommend installation or displacement device or direct customer to ULFT replacement program, as necessary, replace leaking toilet flapper, as meter checks necessary

3. Measure landscaped area (Recommended but not Measure total imgable area (Recommended but 7. Review or develop customer imgation schedule Which measurement method is typically used (Recommended but not required for surveys) 6. Check irrigation system and timers not required for surveys) required for surveys) Outdoor Survey:

yes yes

 Have the number of surveys offered and completed, survey results, and survey costs been tracked? a. If yes, in what form are surveys tracked?

database

Ves yes

yes yes

11. Were customers provided with information packets that included evaluation results and water savings recommendations?

b. Describe how your agency tracks this information.

Page 4 of 25

The SFPUC/SFWD has a billing system that elfows specific fields to be antered to monitor savings.

C. Water Survey Program Expenditures

Next Year

This Year

yes 190000 190000 180218 1. Is your AGENCY implementing on "at least as effective es" D. "At Least As Effective As" 1. Budgeted Expenditures 2. Actual Expenditures

 if YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider It to be "at least as effective venant of this BMP?

The average single-family account only uses 10% of its water for outdoor irrigation. Almost all multifamily accounts do not have any outdoor water use due to the high price of land in San Francisco.

E. Comments

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	Aumber of Cil mixed-use ecounts with lawlecape budgets.	Impelion training?	 Does your agency offer financial incentives to improve lendscape weter use efficiency? 	Budget Number Awarded Total Amount (Bollarst to Customers Awarded Ynar)	0 0	0 0	0	5. Do you provide fandecape water usa efficiency information to new customers and customers changing services?	balow.	Many of our multifamily and commercial customers do not have landeraping and our single family accounts use 10% or less of their water en families not information to new contoners is general to		o, any our move angation and accepting at your maintees? a. If you in it water officiant?	to If yes, those if have dedicated initialism metarina?	7. Do you provide customer notices at the start of the trigation named?	8. Do you provide customer notices at the end of the intigation	D. Landscape Conservation Program Expenditures	This Year		9242	o As"	L. In your AOL NCY implementing an "at land as otherive as" contant of this BMP?	of IVVI 3 of contrator overfaint to detail here some bundenced along the BARP	differs from Livibit 1 and why you careador it to be "at least an offective		Because 99% of SF's water in consumed induces, all rebutes are	Day tours a restaut for	there appears to be some sort of programming glinch. I ver though we executed a country for a state of programming glinch. I very though we	IN, W DHILL GREEN DO TO CAMPACA WITH LITTLE DE					PANKI
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CUWCC Print All		C. C	BMP US: Large Landscape Conservation Programs and Incentives	Reporting Unit: BAMP Form Status: San Francisco PUC - 100% Complete Parisin	A Water Hea Burdante	1. Nurriber of Dedicated fritisalius Meter Accounts:	2. Number of Dadicated triggillun Meter Accounts with Water	Brodgete. 3 John Vater Dischools Adity	Subject (Ar.). 4 Actual Use for Inguistion Meter Accounts with Weter Budgets (AE):	5 Done your negatory provide water use redices to accounts with handless each tilling cycle?	1. Her voir anator downland a madellico flacrofles stalasis	for landscape surveyn?	a If Yes, whose did your agency tedge implementing this strategy?	 Description of marketing / largeling strategy; 	We write to each landscape account, offering them to do a fee	2, Narriant of Surveys Offered.	3. Narritier of Surveys Completed	4. Indicate which of the following Landacape Hemen's are part of your enryey.	a. Irrigation System Check	b. Olahibulion Uniformity Analysis	c Review / Develop krigation Scholdes	 Авалине Ганивизире Акал 	e Measure Lotal Irrigable Area	f. Provide Customer Report / Information	6. Extensional annex recovers enter a serior resultant.	completed survays?	Medical political in the state of the state	Yan, all of khe marveys and ordered table our mainteners system and anch yan, we got a report on how mark make track make flay used as opposed to their fairless.	C. Other BMP 5 Actions	 An agency can provide mixed use accounts with title based lentificape badgets in their of a farge furtherape survoy. 	(жодначи Doan your agency (жомбе mixed une accounts with lander ape	(ardpole?	http://unp.cnwee.org/hnp/pind/pindh.lasso

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MMP Form Status BMP 08: School Education Programs Responding Unit

100% Complete

San Francisco PUC - Retail

A. Implementation

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11/1/1900 4. When did your Agency length implementing fills program? B. School Education Program Expenditues

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C. "At Lanst An f Hottive An"

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BMP 09: Conservation Programs for Cli Accounts

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San Francisco PUC -	A. Implementation I than you agoney identified and ranked COMMITTERIAL	2. They your apparest the alliest and renthal INDRESTRUM

Option A: Cil Water Use Survey and Customer Incentives Program

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2001 Year

3MP 09a: CII ULFT Water Savings

Consumption ranking

Option B: Cll Conservation Program Targets

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 Doen your agasey truck CH program intervnillasm and witer sevings for the purpose of complying with IMPP 9 under this orban? 	 Dees your agency document and maintain mooth on how savings were realized and the method of calculation for eatimated savings? 	 Entimaled annual astvings (AF/yr) from alto varified ections taken by agency since 1991. 	 Estimated annual assings (AT'yr) from non site-varified actions taken by agency since 1991.

B. Conservation Program Expenditures for CII Accounts This Year

Noxt Your 83913 83913 1. Bodgoled Expersificen 2. Actual Expenditues

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 Is your AGENCY inplementing on "at loant as affective as" variant of this BMP? C. "At Least As Effective As"

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a if YES, please explain in detail how you implementation of this BMP differs from Exhibit 1 and why you consider it to be "ot least as effective

The San Francisco Potelio Usales Camuleston bas mate the decision that at this time if would only offer rebates to residential customers. The SFPUC does not offer any loans for retail customers.

D. Comments

Trade shows and events We have found that direct letters and reports during our seminars for preferences and temporary for the resolution of the direct letters and unconsider. We emphasize replacement of telline will write how flow these floody from reals, seminare for addressed tellines and amonger. The Consultation oversecting the SF Prefer Littless Constitution oversecting the SF Prefer Littless Constitution oversecting the SF Prefer Littless. Because our top 20% of our commercial customers use 80% of the water consumed by that costomer class, we target the top 20% of our commercial customers. Describe which method you found to be the most effective overall, and which was the most effective per dollar expensive. Doscribe widch method you found to be the most effective overall, and which was the most effective per dollar expended. programs. They have instead devoted finit rebate funds to residential accounts. Boas your agency keep and maintain customer participant information? (Read the Help information for a complete list of Woold your agency he willing to shave this information if the CUVCC did a study to evaluate the program on behalf of BMP Form Status: 100% Complete 3. What is the total number of customer accounts authologing in the program during the last year? Mayour agency implement a CH ULF I replacement program in the reporting year?
 Mo, plasse explain why on Livin B. 10. 2. How does your egency advertise thin program? Check all What basis does your apours
use to target cardonners for
participation in this program? all the information for this BMP.) San Francisco PUC - Retail A. Targeting and Marketing Check all that apply. B. Implementation уонг адвису? Reporting Unit: Stort meply.

Direct letter

Yes Yes

Valve Wall Number of Tollets Replaced Valve Floor Mount Gravity Tank Assisted Air Standard CII Subsector b. Retail / Wholesale a. Offices c. Hotels d. Health

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e. Industrial 0 0 0 0 0	
f. Schools: 0 0 0 0 0	f, Total 0 0
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vice outside seniose to implement this	d. Other contribution 0
program?	e, Total 0
a. If yes, check all that apply.	D. Comments
7. Participant tracking and follow- up.	The Commission overseeing the SF Public Utilities Commission have relected commercial rebate programs. They have instead devoted their
Based on your program experience, please rank on a scale of 1 to 5, with 1 being the least frequent cause and 5 being the most frequent cause, the	rebate funds to residential accounts.
stomers refused to participate in the program.	
a. Disruption to business 5	
b. Inadequate payback	
c. inadequate ULFT performance	
e. American's with Disabilities Act	
f. Permitting 5	
g. Other, Please describe in B. 9.	
 Please describe general program acceptance/resistance by customers, obstacles to implementation, and other issues affecting program implementation. 	
or effectiveness.	
The Commission overseeing the SF Public Utilities Commission have not rejected commercial rebate programs. They have	
instead devoted their rebate funds to residential accounts.	
(i) Please provide a general assessment of the program for this reporting year. Did your program achieve it explicitly objectives? Were your targeting and marketing approaches effective? Were program costs in line with expectations and	
budgeling?	
The Commission overseeing the SF Public Utiliase Commission have regarded commercial rebale programs. They have instead devoted their rebale funds to residential accounts.	
C. Conservation Program Expenditures for CII ULFT 1. CII ULFT Program: Annual Budget & Expenditure Data 1. CII ULFT Program: Annual Budget & Expenditure Data	
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Page 19 of 25	
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100% Complete BMP Form Status: **BMP 11: Conservation Pricing** Reporting Unit: San Francisco PUC - Retail

Rate Structure Data Volumetric Rates for Water Service by Customer 1. Residential

A. Implementation

Increasing Block

a. Water Rate Structure

Increasing Block \$31564540 C. Total Revenue from Volumetric b. Sewer Rate Structure

d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue

2. Commercial

Increasing Block Increasing Block c. Total Revenue from Volumetric a. Water Rate Structure b. Sewer Rate Structure

\$16212751 d. Total Revenue from Non-Volumetric

\$6073686 Charges, Fees and other Revenue

Increasing Block c. Total Revenue from Volumetric b. Sewer Rate Structure a. Water Rate Structure 3. Industrial

\$215909 \$32380 d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Rates

4. Institutional / Government a. Water Rate Structure b. Sewer Rate Structure

Increasing Block

Uniform

\$531205 \$680768

d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Total Revenue from Volumetric

a. Water Rate Structure 5. Irrigation

c. Total Revenue from Volumetric

b. Sewer Rate Structure

Service Not Provided

Increasing Block

\$276419 d. Total Revenue from Non-Volumetric Charges, Fees and other Revenue Sources

Reported as of 10.

Service Not Provided Increasing Block \$1041506 c. Total Revenue from Volumetric b. Sewer Rate Structure a. Water Rate Structure

B. Conservation Pricing Program Expenditures 8 d, Total Revenue from Non-Volumetric Charges, Fees and other Revenue

Next Year 983209 This Year 1173878 910557 C. "At Least As Effective As" 1. Budgeted Expenditures 2. Actual Expenditures

Is your AGENCY implementing an "at least as effective as" variant of this BMP?

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a. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."

D. Comments

Page 22 of 25	Reported as of 10.			yes				sex.					yes	yes	yes	8	yes	yes				92	9		9	10/6/2005
CUWCC Print All		BMP 13: Water Waste Prohibition Reporting Unit: Year.	San Francisco PUC - Retail 100% Complete 2001 A. Requirements for Documenting BMP Implementation		a, if YES, describe the ordinance:	The ordinance is connected with the Rules and Regulations regarding water service. This allows the San Francisco Public Utilities Commercian	to not only furn of the customer's weller when they have empeatedly widaled the ordinance. But it also allows the SFPUC to charge a fine or	rate surcharge in the event of water shortage. 2. Is a copy of the most current ordinance(s) on file with CUWCC?	st local jurisdictions in your service area in the first text box and r waste ordinance citations in each jurisdiction in the second text	DOX: Cify and County of San Rules and Regulations	B. Implementation Kegarding Water Service	 Indicate which of the water uses listed below are prohibited by your agency or service area. 		b. Single-pass cooling systems for new connections		 d. Non-recirculating systems in all new commercial laundry systems 	stems in all new decorative fountains	Cother, please name Sewweller in food establishments only upon request Sexchèe measures that prohibit water uses lised above. 2. Describe measures that prohibit water uses lised above.	On the first violation, we give them a written notice. On the spoond violation to the processes and the first them the Washer Consequent and Administrator. On the third violation, they gip a choice of a laining or a waser reacting device on their water services line. On the fourth violation, they may not it is favored.	Water Softeners:	Indicate which of the following measures your agency has supported in developing state law:	a. Allow the sate of more efficient, demand-initiated regenerating DIR models.	Develop minimum appliance efficiency standards that: I, Increase the regeneration efficiency standard to at least 3.50 carriers of hardness removed ner nound	of common salt used. ii) Implement an identified maximum number of	gallons discharged per gallon of soft water	http://bmp.cuwcc.org/bmp/print/printall.lasso
CUWCC Print All Page 21 of 25	Reported as of 10.	coordinator BMP Form Status:	San Francisco PUC - Retail 100% Complete 2001 A. Implementation	Does your Agency have a conservation coordinator? Is three a full time nortition?	pplied by another agency with which .	you cooperate in a regional conservation program ? 4. Partner agency's name:	5. If your agency supplies the conservation coordinator:		c. Coordinator's Title Water Conservation Administrator Administrator	d. Coordinator's Experience and Number of 15 Years	e. Date Coordinator's position was created 11/22/1986 (mm/dd/www)	6. Number of conservation staff, including 5 Conservation Coordinator,	B. Conservation Staff Program Expenditures	This Year N	1. Budgeled Expenditures 432079 432079 2. Adual Expenditures 378148	C. "At Least As Effective As"	1. Is your AGENCY implementing an "at least as effective as" no variant of this BMP?	a, if YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as."	D. Comments							http://bmp.cuwce.org/bmp/print/printall.lasso

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Page 24 of 23 TWCC Band All

IMP 14: Residential ULFT Replacement Programs

Multi Strigte Family Accounts DMP Form Blake 199% Complete San Francisco PUG - Retail A. Implementation Requelling Unit.

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B. Water Survey Data

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Page 8 of 26	Reported as of 10,		yes	98			ē			0	yeu	5.5.	10-6-2005
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CUWCC Print All		BMP 03: System Water Audits, Leak Defection and Repair Repording Unit: BMP Form Stetus: Year: San Franctor DuC - Retail 100% Complete 2000 A. Implementation	 Heas your enjanesty correlated in pre-excremiting eystern autal for thin reporters. If YFES, righer the yeakers (AFY early used to calculate verifiables use as a 2. If YFES, righer the yeakers (AFY early used to calculate verifiables use as a 	percent of total protesters. Defermine relations of the state of the total for the to	 Underritine lotal singuly links this wyshiam (AF) Uhing the numbran a blove, if (Mehanach Salane Chline Variatiothe Unear) / Total Singuly is < 0.8 them a link scala systom and it creation. 	Does your agency keep precesses you do in the to worky the valuent rend to chickeless writinate uses as a percent of doth production? A bit your equity complete a feet scale audit during this reject young?	Subsequence and the present and a result or the correlation of the correlation of the correlation of the correlation of the correlation and IPP 0. Does you append to system the destination produced in the correlation of the correlation	Why do a systematic leak defection program as specified in the AWMA Why do a systematic leak defection program as specified in the AWMA Material as wall as footbay at traditial spoke where healt-lags has been consist.	Total number of miles to distribution system line Number of miles of distribution system line surveyed System Audit / Leak Detection Program Expenditures	ž	live As" capain in detail in wysar inglendar as explain in detail in wysar inglennaut int I and why year consider it to 1e "al	E. Comments	hitp://houp.criwec.oup/heap/gionifywhitall.lacen

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		BMP 05: Large Landscape Conservation Programs and Incentives	
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Chest Among and Total Among and Total Among and Color of	d Total Amio Maria O 0 O 0 O 0 O 0 O 0 O 0 O 0 O 0	BMP 06: High-Efficiency Washing Machine Rebate		San Fancisco PuC - Retail 100% Complete A. Implementation	Do any energy service providers or waster utilities in your service area offer rebates for high-efficiency wasteers?	a. If YES, describe the offenings and incentives as well as who the energy/waste water utility provider is.	Pacific Gas and Electric offers rebale of \$50 to \$75 for high-efficiency washers.	2. Does your agency offer rebales for high-efficiency washers?	Writal is the leval of the rebale? Wumber of rebales ewarded.	B. Rebate Program Expenditures		1. Budgeled Expenditures 2. Actual Expenditures	C. "At Least As Effective As" 1 Is voir ACENIY innermation on "at least as affection as"	variant of this BMP?	 a. If YES, please explain in datal how your implemantation of this BMP difers from Exhibit 1 and why you consider it to be "at least as affective 	D. Comments				ll l	
Number production to the control of the country of	2. Maniford of Climachean account with facility and budges. A chose you device instances in equation returned. A chose you will care addition to the choice of the choic	27	OU	t P	0		50		e	603	60	98	2 2		ar	56		6.9		Б	
	in account with Library Control with Library Contro		OI OI	rded Total Amount			on to yes		Il as other services	yes	yes	yes			98 Year Next Year	2326 42326	2326	is" yes	ntation of this BMP at least as effective	andscaping. We coounts as well as nore of their water on caping, we don't	

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Sanorting Unit:	BMD Form Status	Vaar
San Francisco PUC - Retail	100% Complete	2000
A. Implementation		
 Does your agency maintain an active public information program to promote and educate customers about water conservation? 	ve public information program out water conservation?	yes

The Conservation Section uses bill Inserts, brochures, radio spots in three languages, newspaper ads in three languages, public service announcements and web pages.

a. If YES, describe the program and how It's organized.

Indicate which and how many of the following activities are included in your public information program.

Yes/No Number of Events	7
Yes/No	980
Public Information Program Activity	- Dail & Loudiston

a. Paid Advertising	se.	
b. Public Service Announcement	saí	
c. Bill Inserts / Newsletters / Brochures	yes	
 d. Bill showing water usage in comparison to previous year's usage 	saí	
e. Demonstration Gardens	sek	
f. Special Events, Media Events	yes	
g. Speaker's Bureau	sax	
h. Program to coordinate with other government agencies, industry and public	yes	
interest groups and media		

B. Conservation Information Program Expenditures

This Year Next Year

1. Budgeted Expenditures	61000	4
2. Actual Expenditures	61000	

C, "At Least As Effective As"
1. syour Acknowly my elective as effective as"
No variant of this BMP? represending an "at least as effective as an IVTS, peace explain in detail how your implementation of fise BMP differs from Exheld 1 and why you consider if to be "at least as effective

D. Comments

BMP 08: School Education Prog

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	Year:	2000		yes		No. of No. of students teachers' reached workshops
	Status:	nplete		ram to	grade level	No. of students reached w
ams	BMP Form Status:	100% Complete		1. Has your agency implemented a school information program to promote water conservation?	2. Please provide information on your school programs (by grade level):	Are grade- No. of class No. of No. of appropriate presentations students teachers' materials reached workshop distributed?
BMP 08: School Education Programs				d a school inf	n your school	Are grade- appropriate p materials distributed?
I Educati		San Francisco PUC - Retail	_	implemented servation?	nformation or	∢ ∺ - ⊕
3: Schoo	g Unit:	ncisco PU	A. Implementation	1.Has your agency implement promote water conservation?	ise provide in	Grade
BMP 08	Reporting Unit:	San Fra	A. Imple	1.Has	2. Plea	

Grades K-3rd	yes	31	4891	
Grades 4th-6th	yes	21	2656	
Grades 7th-8th	sak	4	99	
High School	yes	48	240	
 Did your Agency's materials meet state education framework requirements? 	set state education f	ramewo	Æ	•
4. When did your Agency begin implementing this program?	implementing this pro	gram?		9/1/19
B. School Education Program Expenditures	m Expenditures			
			This	Next Ye
1. Budgeted Expenditures			23500	305
2. Actual Expenditures			23500	
C. "At Least As Effective As"				

4 4 0 0 8 9 8 9 0 0 N

D. Comments

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Reported as of 10,

s	Year: 2000
CII Accoun	Status: mplete
rograms tor	BMP Form Status: 100% Complete
servation P	PUC -
BIMP US: Conservation Programs for CII Account	Reporting Unit: San Francisco PUC - Retali
	, _

Has your agency identified and renked COMMERCIAL Has your agency identified and renked COMMERCIAL Hes your agency identified and ranked INDISTRIAL Your agency identified and ranked INDISTRIAL 3 Has your agency identified and renked INSTITUTIONAL your agency identified and renked INSTITUTIONAL y

Option A: Cii Water Use Survey and Customer incentives Program.

 is your agency operating a CII water use survey and customer incentives program for the purpose of complying with BMP9 under this option? 	CII water use survi for the purpose of o	sy and complying with	ž
CII Surveys	Commercial	Industrial	Institutiona Accounts
e. Number of New Surveys Offered	170	0	27
b. Number of New Surveys Completed	170	0	27
c. Number of Site Follow-ups of Previous Surveys (within 1 yr)	0	0	
d. Number of Phone Follow- ups of Previous Surveys (within 1 yr)	170	0	22
CII Survey Components	Commercial	Industriel	Institutions Accounts
e. Site Visit	yes	yes	×
f. Evaluation of all water-	yes	yes	×

2

	No. Awarded to Customers	0	0
	Budget (\$/Year)	0	0
efficiency measures, psybacks and agency incentives	Agency CII Customer Incentives	h. Rebates	Loson

yes

уез

f. Evaluation of all water-using apparatus and processes g. Customer report identifying recommended

h. Rebates	0	0
I. Loans	0	0
j. Grants	0	0
k, Others	0	0

Total \$
Amount
O
0
0
0

Option B: Cil Conservation Program Targets

Does your agency track CII program interventions and water savings for the purpose of complying with BMP 9 under this option?	sak
 6. Does your egency document and maintein records on how savings were realized and the method of calculation for estimated savings? 	yes
 Estimated annual savings (AF/yr) from site-venified actions taken by agency since 1991. 	0
 Estimated annual savings (AF/yr) from non-site-verified actions taken by agency since 1991. 	1055
B. Conservation Program Expenditures for Cll Accounts	
This Year	Next Year
1. Budgeted Expenditures 26400	88560
2. Actual Expenditures	

e. If YES, please explain in detail how your implementation of this BMP differs from Exhibit 1 and why you consider it to be "at least as effective as." C. "At Least As Effective As"
1. Is your AGENCY implementing an "at least as effective as" variant of this BMP?

We send a letter to each of our customers after the audit and include a written report on the audit with a list of recommended measures as well as the potential for sewings. D. Comments

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Year 2000

0% Complete

Reported as of 10.

BMP Loun Stutus BMP 89a: CHULFT Water Savings Reporting Unit:

Did yana agasay inglantosi a Cil ULFT raplacement program in the reputing yara?
 No, placeme oxplain why on Line B. 10.

A. Fargeting and Marketing

1. What beins dons your agoncy ease to larget cunlements for participation in this program? Chork all that apply

Describe which mall only you fareal to be the most effective overall, and which was the most effective per dollar expended.

2. New then your against advailing this program? Chack all that apply

Describe which meltiod you found to be the most attestive overall, and which was the most effective particular expended

B. implementation

 Does your expensy keep and metodain carbones participant information? (Read the Diep information for a camplete list of all the information for this 6560")

3. What is the fold number of embouse ecaderis policipaling World your agency he withing to ahare this betormation if the CLIMESC file a staty to evolute the program on behalf of your agonyry?

Number of Tollets Replaced Cil Subsector

in the progner defing the land year ?

Valve Wall Valve Floor Mount Gravity Lank Assistant Ak Standard b. Retail / Windenale a Offices

Mount

o inclusion o. Hotobs d. Hoolth

h. Govern f. Schools. K to 12 g. Fathig

i Churches Distributed in

Ollan

6 Lions your againsy use radaide norvieus fe implement this 5 Program design

a. H yes, chack all that apply houndary?

If thesed on your program equationses, please rack on a scale of Lice 5, with thinking the least frequent cause and 5 basing the most frequent cause. He / Perticipant fraction and tollow

following research wity conforms refused to participate in the program a Unsuplian to faminents

b. hindocpindo prylinck

o. hardequate ULF Fporformance

a American's with Danbilling Act d. Lack of femiling

g. Other, Please describe in ft. 9 Donnigued J

9. Piccaso dencado geran el program acceptas activada harras by customera, obaltadas to imples partidien, and other famos affecting program applicamentation. or offectiveness

10. Please provide a general assessinal of the program for this reporting year. Unityput pupper antibutes on the objective of Vera worm inspirals and numbring upon antibuted to the program of the program and the program and the program and the program and the program of t **Spulling?**

G. Conservation Program Expenditures for Gil ULFT 1. Cil ULFT Program. Annual Budget & Expenditure Date

Budgeted Expenditure ra Labor

c. Markeling & Advartising d. Administration & Overfixed

b Masserials

a. Outside Services f. Folal

2. Cll Ul.F1 Program: Annual Cost Sharing и Wholenale аденту h. Sinte apporcy contribution CONTRIBUIEN

d. Olher confribution o. Federal agency contribution

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Page 20 of 26	Reported as of 10.		Year. 2000		ustomer																																10/6/2005	
			BMP Form Status:	100% Complete	Rate Structure Data Volumetric Rates for Water Service by Customer		Uniform	Sewer Rate Structure Onliom Cardel Revenue from Volumetric Refer Sacaz 1033 81	Volumetrio			Uniform	Uniform	o, Total Revenue from Volumetric Refes \$16758529.82		Sevenue \$5978121		Unifonn	Uniform	anetric Rates \$439935,4	-Volumetric evenum Second d			Uniform	Uniform	ametric Rates \$920892.42	-Volumetric Invenue \$295691.4			Uniform		Volumetric	levenue \$120674.4		Uniform			
CUWCC Print All		BMP 11: Conservation Pricing	Reporting Unit: San Francisco PUC - Retail	A. Implementation	Rate Structure Data Volus	1. Residential	e. Weter Rete Structure	D. Sewer Kate Structure C. Tolel Reverse from Volt	d Total Revenue from Non-Volumetrio	Sources Sources	2. Commercial	a Water Rate Structure	b. Sewer Rate Structure	o, Total Revenue from Volt	d. Total Revenue from Non-Volumetric	Charges, Fees and other R Sources	3. Industrial	e, Water Rate Structure	b. Sewer Rate Structure	c. Total Revenue from Volumetric Rates \$439935.4	d. Total Revenue from Non-Volumetric Channer. Feen and offer Revenue	Sources	4. Institutional / Government	n Water Rate Structure	b. Sewar Rele Siructure	o. Total Revenue from Volumetric Rates	d Total Revenue from Non-Votumetric Charges, Fees and other Revenue	Sources	Marie Date Direction	b Sewer Rate Structure	c. Total Reveius from Volumetric Rates	d Total Ravenue from Non-Volumetric	Charges, Fees and other Revenue Sources	6. Other	a Water Rate Structure		http://mp.cuwce.org/onsp/punt/printell-lasso	
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D. Bower (tale (tructure)	c. Total Revenue Sean Volumestic Raion 80 d. Total Revenue from New Volumestic Ghanges, Feen and other Revenue 80 Section	B. Connervation Pricing Program Expenditures Th	1. Budgefort Lyterellinean	C. "At Least An Hifoctive As"	 In year AUTONEY implementing an "at least as official or as" vertant of the BMP? 	a. if Y1.8, please explain (MAP differs from Lybib) effective en."	frigation is not a fewer

BMP Form Status: 100% Complete Bino, is the coardinator supplied by another agency with which you cooperate in a regional connervation program? 1 Donn your Agmirty liave a content/allou coordinator? None **BMP 12: Conservation Coordinator** San Francisco PUC - Retail 2. In this a full time position? 4 Parline agency's name A. Implementation Reporting Unit:

6. If your agestay aupplies the conservation coordinator.

New Year

Year 2000

Water Commissibility Administrator 15 years in Water Conservation Author of Tive Water Related Broke Kimbarlay M. Knox 023/1980 1007% a What persent is this conservation coordinates's position? Dato Coordinator's position was created (nor/dd/yyyy) d. Coordinator's Experience and Number of Years b. Coordinator's Name c. Conefinator's tillo

This Year B. Conservation Staff Program Expenditures Number of conservation staff, including Conservation Constitutor.

yn ddiene fran i Atbiat and wtry you comster it to be "at ionel an effectivo ne". Next Year 1115/11/18 Is your ACH NCY implementing in "at least as effective as" variant of this IIAP? 1148648 1201331 C. "At Least As Effective As" f. Berlgefort Lapandjures 2. Actual Lyporelliuron

The Connecyalion Administrator's position exclusity begin in Suptember 1990. Geeg Smith told new litat we couldn't pal a date earlier than 1999 and nilli get 1992s. Please get rid of this glich.

D. Comments

10/6/2005

EMP 13: Water Wasto Prohibition Employing Unit (May Found May Foun	found by the espency governing board that times is an adverse effect on the needling content content and an anneal	
Yes 200	officel per the confedence or commission and	
200 200 erving w	A. Does you are not received as years of grounswering supply A. Does you are an are softened softened in tenne weter the null innovance?	9
w Buyun w	Does your agency include internation aloud DRR and exchange- type where adjusting to indicated affect to executage replacement of uses efficient times models? Avater Waste Prohibition Program Expenditures	9
w Buying w	Thie Year Next Year	¥
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cond lext	I a year of NICCV institution are a direct on effective as where of this halfs. The preparation of adole how your inspirementation of this 1840?	g
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d. Non recitodialing systems in all new commercial learnelly negations.		
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C. After Start rigorators, in riching transicipation and special clotheds, to not from a filter of furnishin behavior to be correctly representation of notice antisense of the formation behavior and representation of notice antisense of the formanchialists and		
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veriant of this BMP? e If YES, please explain in detail	differs from Exhibit 1 and why you as. D. Comments																			
Reported as of 10 _h	Year: 2000	Mutte- Femily Units	yes	ar	F Units	5147	0	51	7438		omers- gram is s for \$10 earn is that		omers- gram is 8 for \$10 for \$10 s that	Qu.	8		Next Year 640775		9	
	25	Single-Family Accounts) for yes uttra-low	Number of Tollets Replaced by Agency Program During Report Year	SF Accounts MF Units	290	0	78	Total 1033	fami	San Francisco offers a rebole of up to \$50 for its residential customers- but they must apply prior for purchasing he to for The rebels perogram is follered in the fall, in the spring SFMD selfs water-efficient lottles for \$10 at its selss. At work to decive the house exequincement by quotage earn morn by filling cleaks into customers' case, The other claspory is that way will deliver foliotis to ensire discuss one delines who can not get to the	ram for multi-family residences.	San Francisco oliens a rebale ol up to 550 for its residential customers— but they must apply prior for processing the local. The notable program is offered in the fall. In the approx SFVID sels water-efficient locals for \$10 st a state At work of better the house except removing pulling, client and an experimentally oppose sean morning by filling, clients is not customers' case; The other category is that way will deliver foliate to senior clicans and others who can not get to the	ce in effect for your service	 List local jurisdictions in your service area in the left box and ordinance citations in each jurisdiction in the right box: 		_	661000	"at least as effective as"	
	BMP 14: Residential ULFT R. Reporting Unit: San Francisco PUC - Retail A. Implementation		 Does your Agency have program(s) for replacing high-weter-using toilets with ultra-low flush toilets? 	r of Tollets Replaced by Age	Replacement Method	2. Rebete	3. Direct Instell	5. Other		scribe your egency's ULFT prog	San Frencisco offers a rebate i but they must apply prior to pur offered in the spring at six sales. All work is done in money by lifting toliets into cus will deliver foliets to senior sale.	7. Describe your agency's ULFT program for multi-family residences.	San Francisco offers a rebate i but they must apply prior to pur offered in the spring at six sales. All work is done in money by liffing tollets into cus we will deliver to sentor sale.	8. is a tollet retrofit on resale ordinance in effect for your service area?	 List local jurisdictions in your service are citations in each jurisdiction in the right box: 	B. Residential ULFT Program Expenditures	1. Budgeted Expenditures	2. Actual Expenditures C. "At Least As Effective As"	Is your AGENCY implementing an "at least as effective as"	

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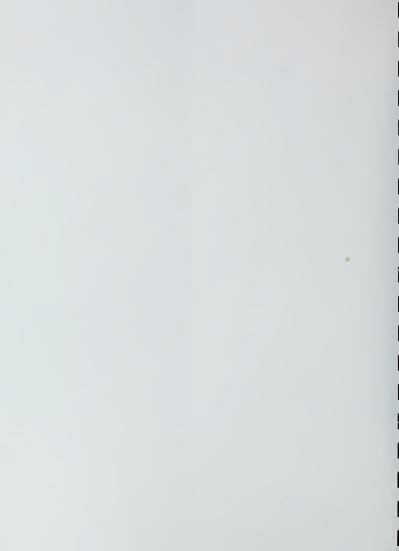
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Appendix E

Cost-Benefit Analysis of Water Conservation Measures [Package C]

I	count Rate	3.0%												
MOD	EL INFOR	MATIO	N	INPUTS		i .				_	_	_		
-	1			<u> </u>		P1	C - Total C	ost		Customer	ja .		(Total)	
	Model No.	Meas No.	Measure	Marke Year	Assume Target	Cumu-	Cumu- fative Water Savings (AF)	Present Value of Savings (Cost) (\$/AF)	Present Velue of Cumu- lalive Cost (\$1000's)	Cumu- lative Waler Savings (AF)	Present Velue of Savings (Cost) (S/AF)	Present Value of Cumu- lative Cost (\$1000's)	Cumu- lalive Water	Presen Value o Savings (Cost) (S/AF)
RES!	DENTIAL	MULT-	FAMILY (2-RMFConsMeas.xls)	200										
				Marke Year	Assumer Target									
Yes	RMF-1	9a	Clothes Washer Rebale -25 g/l rebate											
Yes		9b	Clothes Washer Rebale -17 g/l rebale											
Yes	J	9c	Clothes Washer Rebate 17 g/l rebate	-										
		1000	Clothes Washer Rebale Total	0005	Based on	\$271	5,442	\$50	\$681	5,442	\$125	\$952	5,442	\$17
			penentration of low use washing machines by year	2005	12.2%									
			"Reduction target" is the reduction in multi-family	2010	50.9% 76.1%									
		eng-u	se for clothes washing as compared to base year	2020	83.6%									
			2000 (not adj for units or density).	2025	88.7%									
				2030	92.2%									
		ш.		2000	32.270									
Yes	RMF-2	2	Toilets-6/3 or 4 liter Rebates		Based on									
Yes		3	Tolets-ULF Rebale		Based on									
No .		7	Toilets-Retrofil		Based on									
65		В	Toilets-1.6 gpf Replace on Sale		Based on									
		Market	penentration of <= 1.6 gal flush foilets by year fisled.	2005	44.5%	\$342	8,924	538	\$1,817	8,924	\$204	\$2,160	8,924	\$24
		"Reduct	on target" is the reduction in multi-family toilet end-	2010	57.5%	1	0,50.4	400	71,011	O,OZ.	-	V= 1.00		
		use as	compared to base year 2000 (not adj for units or	2015	67.3%									
			density).	2020	74 8%									
- 1				2025	80.6%									
				2030	85.0%									
				0.007										
No	RMF-3	10	Submetering Retrofit Incentives	25%		\$0	·	SO	\$0	1	\$0	so		So
es	RMF-4	11	Submalanng Reqt. for New Units	100%		\$265	4,746	\$56	\$17,380	4,746	\$3,662	\$17,645	4,746	\$3,718
es	RMF-5	6_	Water Surveys	1.5%		\$1,715	3,449	\$497	\$528	3,449	\$153	\$2,243	3,449	\$650
1														1
				Market	Penetration Assumed									
- 1				Vone	Target									
- 1			District 4.25 cam showedteeds	Year	Based on				ac1			col		S0
lo !	RMF-6	11-1	Retrofil: 1.75 gpm showerheads penentration of 1.75 gpm showerheads by year	2005	0.0%	\$0		50	\$0	•	\$0	\$0		50
		Marke	"Reduction target" is the reduction in multi-family	2010	0.0%									1
		ilsjed.	er end-use as compared to base year 2000 (not	2015	0.0%									
		SHOWE	adjusted for number of units or density).	2020	0.0%									
	7		adjusted to Humber of Ories of Gensuy).	2025	0.0%									4
				2030	0.0%									
	8													1
											\$904	\$22,999	22,562	\$1,019

Value of Water	1076 \$/AF	\$/AF				١			76	
RESBNTAISNE AMK (-RSEonsMeasks	SAMK (I-RSE	SonsMeask								
		-	<i>σ</i>	2030 Water Savings (m.d)		Present Value of Water	First Five Years of Total	Years of To	of Total Utility Costs Jollars, \$1,000)	Utility Cost
Model No.		Meas. No. Measure	Benefit- Cost Ratio To	Total Outside	Production in 10 2030		Materials Cc \$247	Consulting \$0	Admin Total \$74 \$321	\$aved (\$/AF) \$485
	-	11	4 }-	1 1]		\$308	\$0	\$60 \$368	\$55
Yes RSF-2	2,3,7,8			4		62 072	888	0\$	\$0 \$588	\$428
Yes RSF-3	4	Public Information	-			370/20	2000		1	0\$
No RSF-4	2	Leak Oetection/Repair	+			0\$	0	0.9	- -	9
Yes RSF-5	9	Water Surveys	1.35 0	0.00 0.02	%9.0	\$1,941	\$440	\$0	9	\$799
No RSF-6	7	Retrofit: 1.75 gpm showerheads	NA I	0.00 0.00	%0.0	\$0	\$0	\$0	\$ 0\$	\$0
Yes RSF-7	45	Dishwasher Rebate	1.16 0	0.00 0.00	%0.0	\$40	\$19	\$0	\$6 \$24	\$927
-		RSF	4.13 1 0	0.74 0.03	3 4.8%	\$5,261	\$1 602	\$0	\$249 \$1,852	\$261
PESBNITM	EMY P.RME	consMeasks)	1	в						
Yes RMF.	6	Yes RMF-1 9 Clothes Washer Rebates	21.63 0	0.16 0.00	% <u>9</u> .0	\$271	\$130	\$0	\$39 \$168	\$50
Yes RMF-2	2 2,3,7,8 Toilets	Toilets	28.04	0.38 0.00	0 1.5%	\$342	\$169	\$0	\$36 \$202	\$38
No RMF-3	10	Submetering Retrofit Incentives	NA	0.00 00.00	% <u>0.0</u> c	\$0	\$0	\$0	\$0 80	\$0
, n	11	Submetering Regt. for New Units	19.28 0	0.33 0.00	0 1.3%	\$265	\$51	\$0	\$5 \$56	\$56
	ď	Water Surveys	-	0.13 0.00	0 0.5%	\$1,715	\$372	\$0	\$93 \$465	\$497
200-		Retroft: 175 onm showerheads	-		-	\$0	\$0	\$0	\$0 \$0	\$0
		INCHOUR. 1.13 doing shower regue	1	1		605 603	£722	U 	¢173 ¢895	\$115
Total		RMF	9.36	1.00 0.00	0 3.9%	\$2,593	2776	00		2
NG-RESBNT	AIMEASHES	NG-RESENTAIMEASHES 9-NRCONSMeashs) Yes NR-1 14 Landscape Audits	2.18	0.00 0.00	0.0%	\$857	\$397	\$0	\$119 \$106	\$493
Yes NR-3	3 1 16	Water Savings Awards		00.0 0.00	0 0.2%	\$29	88	\$0	\$1 \$9	\$42
	-	Water Audits		1.18 0.00	0 3.8%	\$13,027	\$3,036	\$0	\$759 \$3,795	5 \$784
		Urinals	4 53			\$656	\$293	\$0		\$237
Yes NR-6	7-6 19	Toilets	12.48	0.03 0.00	00 0.1%	\$109	\$93	\$0	\$23 \$116	\$86
Yes NR-7	Н	Large Innovative Retrofit	1.02	4-	%0.0 0.0%	\$78	6\$	\$13	\$9 \$31	\$1,059
Yes NR-8	-8 21	Large New Project Incentives	1.02	-		\$78	- 6\$	\$13	\$9	\$1.059
Yes NR-11		Audite-Hoenitale	-	1	-	9 4	, PC\$	G G	$\{ \}$	6450
Н		radio-i iospitais		1		- -	470	00	1	000
		Audits-Laundry SS Rebates		-		\$214	\$189	\$0	\$47 \$237	\$69
S	13 26	Audits-Schools/Universities	1.88	0.00 0.00	%0.0 00	222	\$64	\$0	\$10 \$73	\$572
No NR-14	14 27	Audits-School/University Toilets	AN	0.00 00.00	%0.0 0.0%	0\$	1 80	\$0	80 80	\$0
Yes NR-15	15 28	Audits-School/University Landscaping	2.18	0.00 0.00	%0.0	\$18	88	\$0	\$2 \$11	\$493
No NR-	NR-16 29	School/University Artificial Turl	NA	0.00 0.00	0.0%	0\$	0\$	0\$	0\$ 0\$	\$0
	-18 31	Low Flow Sprayers-		-		100	000		-	
						404	70¢	0.4	1/4 64	0/9
	NR-19 32	Low Flow Sprayers-Restaurants	30.71	0.28 0.00	0.9%	\$261	\$255	\$0	\$38 \$294	\$35
Yes NR-19a	19a 46	Steamers-Restaurants	17.48	0.05 0.00	0.2%	\$82	\$80	\$0	\$12 \$92	\$62
No	NR-20 42	Cooling Towers		H						
	NR-21 44	City/PUC Water Broom	51.72	0.40 0.40	1.3%	\$221	\$199	80	\$50 \$249	\$21
	NR-21a 14	City/PUC Landscape	86.9	0.00 T 00.00		\$6	\$3	\$0	-	
11	NR-22 44	Water Brooms	9.70	0.05 0.05		\$148	\$133	\$0	\$33 \$166	-
Yes	NR-23 33	Audits-Hotels/Motels	12.07	0.41 0.00		\$694	₹334	U\$	1	
NO NO	NR-24 34	WAVE Program	AM	1	., 15	9	0\$	04	1 }	
Ne Y	NR-25 35	Hotels Toilets	7.00	-	ľ				1	04
			00:-		00.7%	\$1,138	\$341	\$0	\$51 \$392	\$688
Total Borg	Total	Non-residential	3.50	2.71 0.45	45 8.8%	\$17.809	\$5,537	\$26	\$1,333 \$6,486	5 \$307
		Total Package	4.22				The second			
				4.45	5.6%	\$25,663	\$7,861	\$26	\$1,755 \$9,23	3 \$255

Evaluation of Conservation Measures Water Savings - Residential Single Family Measures

Savings in Acre-feet	eet						100		o/ Dodinotion
Year	RSF-1	RSF-2	RSF-3	RSF-4	RSF-5	RSF-6	KSF-/	lotal	No Reduction
2005	L	81	205	1	17	,	٥	308	0%
9000		154	203		33	1	1	402	2%
2000	10	220	201		49	,	_	489	2%
2002		274	199	3	69		-	595	3%
2002		321	197	 	80		-	633	3%
2010		363	195		95		1	695	3%
2017		400	193	 -	110	'	2	752	4%
2012		432	191	 -	109	ı	2	789	4%
2013		460	190		108	,	2	820	4%
2014		484	188		108	,	2	848	4%
2015		501	187	, 	107	1	2	860	4%
2016		516	185	 -	106	,	2	871	2%
2017		527	184		106		2	878	2%
2018		536	183	١.	105	-	2	883	2%
2019		542	182	'	105	-	2	886	2%
2020		546	181		104	-	2	886	2%
2021		549	180	,	104		2	988	%9
2022	49	549	179		103		2	883	2%
2023		548	179	 	103	-	2	880	2%
2024		546	178	, 	103	-	2	875	2%
2025		542	177	,	102	-	2	868	2%
2026		537	177	, 	102	-	2	862	%5
2027		532	176		102	-	2	854	%9
2028		525	176	١.	101	,	2	845	%9
2029	41	518	175	1	101	-	2	836	%9
0500		510	177		101		0	828	%5

Description of SFPUC Retail Water Conservation Measures Evaluated

RSF-1 Washing Maclines: For these computations, energy savings to the customer have been included in the customer costs. Rebates for 25 gallon per load fifty, \$100 rebates per year. Annual administration costs are estimated at 30% of the program costs. The rebate will not necessarily cover the incremental cost of the more efficient unit. It is assumed that once the unit expires, the customer will replace with an identical unit. Rebates for 17 gallon per load years 2005-2006. Provide a rebate or voucher for a high efficiency washing machine (17 gallons per load). Evaluated as eighty, \$150 machines incremental cost of the more efficient unit. It is assumed that once the unit expires, the customer will replace with an identical unit. Rebates for 17 gallon per load years 2007-2014. Provide a rebate or voucher for a high efficiency washing machine (17 gallons per load). Evaluated as eighty, \$150 machines incremental cost of the more efficient unit. It is assumed that once the unit expires, the customer will replace with an identical unit. Rebates for 17 gallon per load and the program costs. The rebate will not necessarily cover the incremental cost of the more efficient unit. It is assumed that once the unit expires, the customer will replace with an identical unit. Rebates for 6/3 dual flush or 4-liter Years 2005-2014: Provide a rebate or voucher for the retrofit of a 6/3 dual flush, 4-liter or equivalent very low water use toilet. Evaluated as	-		SINGLE-FAMILY RESIDENTIAL (RSF)
RSF-1 Washing Maclines: For these computations, energy savings to the customer have been included in the customer costs. Rebates for 25 gallon per load fifty, \$100 rebates per year. Annual administration costs are estimated at 30% of the program costs. The rebate will not necessarily cover the incremental cost of the more efficient unit. It is assumed that once the unit expires, the customer will replace with an identical unit. Annual administration costs are estimated at 30% of the program costs. The rebate will not necessarily cover the incremental cost of the more efficient unit. It is assumed that once the unit expires, the customer will replace with an identical unit. Years 2007-2014. Provide a rebate or voucher for a high efficiency washing machine (17 gallons per load). Evaluated as eighty, \$150 rebates per year. Annual administration costs are estimated at 30% of the program costs. The rebate will not necessarily cover the incremental cost of the more efficient unit. It is assumed that once the unit expires, the customer will replace with an identical unit. RSF-2 Toilets RSF-2 Toilets Rebates for 63 dual flush or 4-liter Rebates for 63 dual flush or 4-liter Rebates for 63 dual flush water use toilet. Evaluated as		Conservation Measure	Description
25 gallon per load Years 2005-2006. If if thy, \$100 rebates the incremental control of Years 2005-2006. The incremental control of Years 2005-2006. The incremental cost of Years 2007-2014. If the incremental control of Years 2005-2014.	RSI	3-1 Washing Machines: For these	computations, energy savings to the customer have been included in the customer costs.
17 gallon per load rebates per year. Frebates per year. Fincemental cost of Years 2007-2014. 17 gallon per load Years 2007-2014. 18 juncemental cost of Years 2007-2014.		Rebates for 25 gallon per load machines	Years 2005-2006. Provide a rebate or voucher for a high efficiency washing machine (25 gallons per load). Evaluated as two-hundred and fifty, \$100 rebates per year. Annual administration costs are estimated at 30% of the program costs. The rebate will not necessarily cover the incremental cost of the more efficient unit. It is assumed that once the unit expires, the customer will replace with an identical unit.
Years 2007-2014. fiffy, \$150 rebates the incremental co the incremental countries are set of the incremental countries and incremental countries are set of the incremental countries are se	7	Rebates for 17 gallon per load machines	Years 2005-2006. Provide a rebate or voucher for a high efficiency washing machine (17 gallons per load). Evaluated as eighty, \$150 rebates per year. Annual administration costs are estimated at 30% of the program costs. The rebate will not necessarily cover the incremental cost of the more efficient unit. It is assumed that once the unit expires, the customer will replace with an identical unit.
r 6/3 dual flush or 4-liter Years 2005-2014:	8	Rebates for 17 gallon per load machines	Years 2007-2014. Provide a rebate or voucher for a high efficiency washing machine (17 gallons per load). Evaluated as three-hundred and fifty, \$150 rebates per year. Annual administration costs are estimated at 30% of the program costs. The rebate will not necessarily cover the incremental cost of the more efficient unit. It is assumed that once the unit expires, the customer will replace with an identical unit.
4 Rebates for 6/3 dual flush or 4-liter Years 2005-2014: Provide a rebate or voucher for the retrofit of a 6/3 dual flush, 4-liter or equivalent very low water use toilet. Evaluated as	RS	F-2 Toilets	
	4	Rebates for 6/3 dual flush or 4-liter	Years 2005-2014: Provide a rebate or voucher for the retrofit of a 6/3 dual flush, 4-liter or equivalent very low water use toilet. Evaluated as

Description of SFPUC Retail Water Conservation Measures Evaluated

		MILTI-FAMILY RESIDENTIAL (RMF)
	Conservation Measure	Describeron
RMI	RMF-1 Washing Machines	
13	Rebates for 25 gallon per load machines	Years 2005-2006. Provide a rebate or voucher for a high efficiency washing machine (25 gallons per load) in common laundry area. Evaluated as fifty, \$100 rebates per year. Annual administration costs are estimated at 30% of the program costs. The rebate will not necessarily cover the incremental cost of the more efficient unit. It is assumed that once the unit expires, the customer will replace with an identical unit.
14	Rebates for 17 gallon per load machines	Years 2005-2006. Provide a rebate or voucher for a high efficiency washing machine (17 gallons per load) in common laundry area. Evaluated as one-hundred and fifty, \$150 rebates per year. Annual administration costs are estimated at 30% of the program costs. The rebate will not necessarily cover the incremental cost of the more efficient unit. It is assumed that once the unit expires, the customer will replace with an identical unit.
15	Rebates for 17 gallon per load machines	Years 2007-2014. Provide a rebate or voucher for a high efficiency washing machine (17 gallons per load) in common laundry area. Evaluated as one-hundred and fifty, \$150 rebates per year. Annual administration costs are estimated at 30% of the program costs. The rebate will not necessarily cover the incremental cost of the more efficient unit. It is assumed that once the unit expires, the customer will replace with an identical unit.
RM	RMF-2 Toilets	
16	Rebates for 6/3 dual flush or 4-liter toilets	Years 2005-2014: Provide a rebate or voucher for the retrofit of a 6/3 dual flush, 4-liter or equivalent very low water use toilet. Evaluated as one-hundred, \$100 rebates per year. Annual administration costs are estimated at 25% of the program costs. The rebate will not necessarily cover the incremental cost of the more efficient unit. It is assumed that once the unit expires, the customer will replace with an identical unit.
17	Rebates 1.6 gallon per flush toilets	Years 2005-2007: Provide a rebate or voucher for the retrofit of a 1.6 gallon per flush toilet. Evaluated as three-hundred and fifty, \$50 rebates per year. Annual administration costs are estimated at 25% of the program costs. The rebate will not necessarily cover the incremental cost of the more efficient unit. It is assumed that once the unit expires, the customer will replace with an identical unit.
8	Retrofit kits for 5 and 7 gallon per flush toilets	Years 2005-2030: Provide owners of pre-1992 units with retrofit kits that contain easy-to-install toilet tank retrofit devices. The cost of the program was estimated at \$10 per fixture. Annual administration costs are estimated at 10% of the program costs. The life expectancy of the fixture is 5 years.
19	Require 1.6 gal flush toilets to be installed at the time of sale	Years 2005-2030: Certificate of compliance be submitted to the SFPUC that verifies that a plumber has inspected the property and efficient fixtures where either already there or were installed at the time of sale, before close of escrow. The cost to the SFPUC is estimated at \$10 per fixture. Annual administration costs are estimated at 10% of the program costs. About seventy-five percent of the resale rate was used (1.1 percent). It is assumed that once the unit expires, the customer will replace with an identical unit.
RM	RMF-3 Sub-metering Retrofit Incentives	tives
20	Incentives for retrofilting sub- metering	Years 2005-2014: Rescind regulations that prohibit sub-metering of multi-family buildings. Encourage sub-metering through water audits, direct mail promotions, and/or incentives to building owners. The cost to the SFPUC is estimated at \$1000 per account. Annual administration costs are estimated at 25% of the program costs. The program will reach 25% of the existing multi-family units at the end of the 10-year program. Savings are estimated at 10% of the unit's total use.
RMI	RMF-4 Sub-metering Requirements for New Units	for New Units
21	Incentives for retrofitting submetering	Years 2005-2014: Require all new multi-family units to be sub-metered. To reduce financial impacts on tenants specify acceptable methods of metering and billing. The cost to the SFPUC is estimated at \$10 per unit. Annual administration costs are estimated at 10% of the unit's total use.
RMI	RMF-5 Water Surveys	
22	Water Surveys	Years 2005-2030: Offer indoor and outdoor water surveys to multi-family residential customers with high water use. The cost of the program is estimated at \$130 per account. The measure life is estimated at seven years. Annual administration costs are estimated at 25% of the program costs. The program will reach 1.5% of the residential accounts each year and savings are estimated at 5% inside.
RM	RMF-6 Showerheads	
23	Retrofit kits 1.75 gallon per minute showerbeads	Years 2005-2030: Provide owners with retrofit kits that contain casy-to-install 1.75 gallon per minute showerhead devices. It is assumed that 5000 units would be given out yearly at a cost of \$15 per account. Annual administration costs are estimated at zero. It is assumed that once the unit expires, the customer will replace with an identical unit.

Evaluated salres Meas Conservation Retail Water SFPUC of escription

Years 2005-2030: Sponsor an annual awards program for businesses that significantly reduce water use. They would receive a plaque, presented at a lunch with the mayor. The cost of the program is estimated at \$1000/account. Annual administration costs are estimated at 15% of the program costs. The program will reach about three customers every two years. Water savings are estimated at 25% of their total water use. cost of Years 2005-2030: Provide conservation potential goals for non-residential accounts and offer assistance in the form of audits and employec education. The cost of the program is estimated at \$\frac{8}{4000}\account.\ Annual administration costs are estimated at \$25\psi of the program costs. The program will reach 1\psi of the non-residential customers each year. The life of the measure is \$20 years. Water savings are estimated at \$12\psi of their total water use. Years 2005-2014: Selectively provide rebates to businesses to convert to efficient urinals only where urinals are subject to high use, such as restaurants, theaters, stadiums etc. Evaluated as two-hundred and fifty, \$200 rebates per year. Annual administration costs are estimated at unit expires, the eustomer will replace with an identical unit. Years 2005-2030: Require that new buildings be fitted with 0.5 gal/flush urinals rather than the current standard of 1.0-gal/flush models. The cost of the program is estimated at \$25 per fixture. Annual administration costs are estimated at 10% of the program costs. The rebate will not necessarily cover the incremental cost of the more efficient unit. Years 2007-2016: Provide incentives for innovative conservation of large retrofit non-residential projects. The SFPUC will target one customer per year. The cost of the program is estimated at \$2,700 per account. Annual administration costs are estimated at 100% of the program costs. The anticipated savings is estimated at 400 gallons per day per site. There are approximately 710 non-residential accounts in San Francisco that exceed demands of 5000 gallons per day. Years 2005-2007: Provide a rebate or voucher for the retrofit of a 1.6 gallon per flush totlet. Evaluated as five-hundred, \$60 rebates per year Annual administration costs are estimated at 25% of the program costs. The rebate will not cover the incremental cost of the more officient unit. It is assumed that once the unit expires, the customer will replace with an identical unit. Years 2007-2016: Provide incentives for conservation on new/proposed large non-residential projects. The SFPUC will target one customer per year. The cost of the program is estimated at \$2,700 per account. Annual administration costs are estimated at 100% of the program costs. The anticipated savings is estimated at 400 gallons per day per site. Years 2005-2014: Provide water audits to hospitals. The SFPUC will target two hospitals per year. The cost of the program is estimated at \$2,300 per account. Annual administration costs are estimated at 25% of the program costs. The measure life is estimated at seven years. Years 2005-2010: Provide toilet rebates or vouchers to schools and universities. The SFPUC will target twelve facilities per year. Evaluated as two-hundred, \$400 rebates per year. Annual administration costs are estimated at 30% of the program costs. The rebate will not cover the incremental cost of the more efficient unit. It is assumed that once the unit expires, the customer will replace with an identical unit. Years 2005-2010: Offer laundromat managers or washing machine leasing companies incentives to retrofit or use efficient clothes washers. Evaluated as two-hundred, \$200 rebates per year. Annual administration costs are estimated at 25% of the program costs. The rebate will not necessarily cover the incremental cost of the more efficient unit. The new units are rated at 25 gallons per load. It is assumed that once the unit expires, the customer will replace with an identical unit. Years 2005-2014: Incentives for using artificial turf in school playgrounds/athletic fields. The cost of the program is estimated at \$172,400/acre. Annual administration costs are estimated at 30% of the program costs. It is assumed in the customer cost that the field will be replaced with an identical product at the end of its life. The program will reach I facility per year. There are about 51 accounts that have been targeted. Savings are estimated at 100% of the irrigation use. cost of Years 2005-2009: Provide free installation of 1.6 gallon per minute spray nozzles for the rinse and elean operation in groccries and flower shops. The cost of the program is estimated at \$130 per site and it is estimated that 90 units will be distributed annually. It is estimated that there may be a total of about 610 sites. Annual administration costs are estimated at 15% of the program costs. The savings are estimated at 75 gallons per day per site. It is assumed that once the unit expires, the customer will replace with an identical unit. Years 2005-2014: Provide free landscape water audits and financial incentives for irrigation upgrades to all irrigation accounts. The the program is estimated at \$800/acre. Annual administration costs are estimated at 30% of the program costs. The measure life is estimated at seven years. The program will reach 5% of the irrigation accounts each year and savings are estimated at 15% total use. Years 2005-2010: Provide water audits to schools and universities. The SFPUC will target twelve facilities per year. The cost of the program is estimated at \$1,000 per account. Annual administration costs are estimated at 15% of the program costs. The program is estimated to reduce their current use by 10%. The measure life is estimated at seven years. Years 2005-2014: Provide free landscape water audits and financial incentives for irrigation upgrades to all irrigation accounts. The custimated at \$8000/acre. Annual administration costs are estimated at 30% of the program costs. The measure life is estimated at seven years. The program will reach 1% of the targeted accounts each year. There are about 51 accounts that have been largeted. Savings are estimated at 15% of current irrigation use. Description NON-RESIDENTIAL (NR) NR-15 Audits-Schools and Universities Landscaping NR-16 Schools and Universities Artificial Turf Universities Toilets NR-18 Low Flow Sprayers – Grocery/Flower NR-7 Large Innovative Retrofit Incentives NR-12 Audits-Laundry Self-serve Rebates NR-13 Audits-Schools and Universities Rebates for replacing high use commercial urinals with 0.5 gal/flush Award program for water savings by businesses Provide toilets rebates or vouchers to schools and universities Artificial turf program for schools and universities Require 0.5 gal/flush urinals in new buildings NR-8 Large New Project Incentives Grocery/Flower low flow spray rinse nozzles Landscape audits and financial incentives for irrigation upgrades Rebates 1.6 gallon per flush toilets Offer incentives for replacement or lease of clothes washers in coinoperated laundries Provide water audits to schools and universities Landscape audits and financial incentives for irrigation upgrades to schools and universities Conservation Measure Provide water audits to hospitals Replace inefficient water using NR-3 Water Savings Awards Large new project incentives NR-14 Audits-Schools and NR-1 Landscape Audits NR-11 Audits-Hospitals NR-4 Water Audit Water Audit NR-5 Urinals NR-6 Toilets urinals 24 25 26 27 28 34 29 35 33 30 36 31 32 37 38

Description of SFPUC Retail Water Conservation Measures Evaluated

		NON-RESIDENTIAL (NR) - continued
Z	NR-19 I ow Flow Sprayers - Restaurants	
39	Restaurant low flow spray rinse nozzles	Years 2005-2009: Provide free installation of L.6 gallon per minute spray nozzles for the rinse and clean operation in restaurants and other commercial kitchens that did not participate in 2003-4 CUWCC program. The cost of the program is estimated at \$130 per site and it is estimated that 370 units will be distributed annually. It is estimated that there may be a total of about 2,450 sites. Annual administration estimated that 370 units will be distributed annually. The savings are estimated at 15% of the program costs. The savings are estimated at 150 gallons per day per site. Energy savings to the customer bave been included in the customer costs. It is assumed that once the unit expires, the customer will replace with an identical unit.
NR	NR-19a Steamers – Restaurants	
40	Provide rebates for electric steam cookers to restaurants	Years 2005-2009: Provide rebates or vouchers to restaurants that purchase electric steam cookers. The cost of the program is estimated at \$300 per site and it is estimated that 50 units will be distributed annually. It is assumed that only about 20% of the restaurants use steamers Annual administration costs are estimated at 15% of the program costs. The savings are estimated at 197 gallons per day per site. The rebate will not necessarily cover the incremental cost of the more efficient unit. Energy savings to the customer have been included in the customer costs. It is assumed that once the unit expires, the customer will replace with an identical unit.
N.	NR-20 Cooling Towers	
4	Cooling tower regulations	Prohibit discharge of cooling tower blow down unless the TDS of the water is at least a certain level (that would ensure 5-10 cycles of concentration). There was insufficient data available to evaluate this measure.
NR	NR-21 City/PUC Water Broom	
42	Provide water brooms to City departments	Years 2005-2009: Provide water brooms to City departments. The cost of the program is estimated at \$750 per site (three units per site) and it is estimated that 50 sites will be reached annually. Annual administration costs are estimated at 25% of the program costs. Savings are based on reduced flow rate and labor time. It has been assumed that using the water broom reduces the flow rate from 8.4 gallons per minute to 3.6 gallons per minute and labor time is reduced in half. It is assumed that the customer will replace the water broom with an identical product at the end of its life.
N.R.	NR-21a City/PUC Water Landscape	
43	Landscape audits and financial incentives for irrigation upgrades to all City departments	Years 2005-2014: Provide free landscape water audits and financial incentives for irrigation upgrades to all City departments. The cost of the program is estimated at \$800/acre. Annual administration costs are estimated at 30% of the program costs. The measure life is estimated at seven years. The program will reach 1% of the targeted accounts each year. There are about 300 accounts that have been targeted. Savings are estimated at 15% of the irrigation use.
NR-	NR-22 Water Broom	
44	Provide water brooms to non- residential customers	Years 2005-2009: Provide water brooms to non-residential customers. The cost of the program is estimated at \$250 per unit and it is estimated that 100 units will be distributed annually. Annual administration costs are estimated at 25% of the program costs. Savings are based on reduced flow rate and labor time. It has been assumed that using the water broom reduces the flow rate from 8.4 gallons per minute to 3.6 gallons per minute and labor time is reduced in half. It is assumed that the customer will replace the water broom with an identical product at the end of its life.
NR-23	23 Audits-Hotel/Motels	
45	Focused water audits for hotels/motels	Years 2005-2014: Provide free water audits to hotels and motels. Standardize the types of services offered to reduce costs including bathrooms, kitchens, ice machines, cooling towers, landscaping, and irrigation systems and schedules. The cost of the program is estimated at \$3,000 per facility and it is estimated that 21 facilities will be visited annually. Annual administration costs are estimated at 25% of the program costs. Savings are estimated at 15% of their total use. There are approximately 421 establishments.
NR	NR-24 WAVE Program	
46	WAVE Program (sponsored by US EPA) for hotels	Years 2005-2014: Provide hotels with information about the US EPA's WAVE program. This program encourages hotels to do their own water audit and then analyze their water use with the software provided. The software identifies water saving projects and computes paybacks. Hotels that agree to participate in the program also agree to install cost-effective water conserving equipment. The cost of the program is estimated at \$200 per facility and it is estimated that 1% of the facilities will be visited annually. There are approximately 421 establishments. Annual administration costs are estimated at 15% of the program costs. Savings are estimated at 5% of their total use.
NR	NR-25 Hotel Toilets	
47	Require toilet fixture replacement on resale	Years 2005-2030: Certificate of compliance to be submitted to the SFPUC that verifies that a plumber has inspected the property and efficient fixtures where either already there or were installed at the time of sale, before close of escrow. The cost to the SFPUC is estimated at \$10 per fixture. The number of hotel toilets in rooms is estimated at about 32,400. Annual administration costs are estimated at 15% of the program costs. The resale rate is estimated at 2%. It is assumed that once the unit expires, the customer will replace with an identical unit.
48	Retrofit of toilets with financial assistance	Years 2005-2030: Provide a rebate schedule for toilets for hotels that don't participate in an audit. The cost to the SFPUC is estimated at \$100 per room. The number of hotel toilets in rooms is estimated at about 32,400. Annual administration costs are estimated at 15% of the program costs. It is assumed that once the unit expires, the customer will replace with an identical unit.





Appendix F

Summary of San Francisco's Response to 1987-92 Drought Experience

Background:

The 1987-92 six year drought provides an example of how the near-term drought management process works in times when the operational capabilities of Hetch Hetchy and other water supplies available to the SFPUC are taxed to a point that forces drastic actions to avoid running out of water. By the sixth year of that drought period, many of the programs and actions identified in San Francisco's current Retail Water Shortage Allocation Plan (adopted in December 2001) had been implemented. The following describes some of the major actions that occurred:

Demand Reductions:

The extended drought forced San Francisco to adopt a mandatory rationing program, enforced by stiff excess use charges and the threat of shut-off for continued violations of water use prohibitions. Mandatory rationing was in effect May of 1988 through May of 1999, re-instituted in May of 1990, and continued until March of 1993. A Water Shortage Emergency Resolution was passed by the SFPUC on April 28, 1988 declaring these rationing periods (Resolution No. 88-0155). A copy of this resolution can be found at the end of this appendix.

The SFPUC's water rationing program was one of the toughest in the state and the most stringent imposed by any major urban water supply agency. Although the specifics of the program varied over time, the basic outline of the mandatory rationing program was to achieve a 25 percent reduction to 1987 (pre-drought) consumption (system-wide), with water allocations set on an account-by-account basis.

To provide a strong incentive for customers to use no more water than their allotment, the SFPUC adopted a rate structure that incorporated excess use charges. Any customer that used less water than its allotment was charged the normal rate per unit of water consumption, while any customer who used more than its allotment was charged a multiple of the normal rate for every unit of consumption above its allotment. As of January 1, 1992 (the last year of the rationing program), the rate structure shown in the table below applied to SFPLIC customers.

Excess Use Charges	
If Water Consumption Is (Over Allotment)	Excess Use Charge Will Be (Times Normal Rate)
Up to 10%	2
10.01 - 20%	8
20.01% or over	10

In the event that water was used in excess of the customer's specified allotment, the SFPUC could, after one written warning, install a flow restrictor on the customer's service line. The charge to install and remove the restricting device is shown in the table below. If a customer continued to consume water in excess of its allotment, the SFPUC had the authority to discontinue the customer's water service and require the customer to bear the cost for the re-connection of water service.

ee For Installing F	low Restricting Devices
Meter Size	Installation/Removal Cost
to 1"	\$95
1" to 2"	\$149
3" and larger	Actual cost

In addition to pricing distincentives for excess water use, numerous water use restrictions were adopted and enforced. San Francisco retail oustomers were required to comply with the following water use prohibitions and restrictions.

- Water waste, including but not limited to, any flooding or runoff into the street or gutters, was prohibited.
- Hoses could not be used to clean sidewalks, driveways, patios, plazas, homes, businesses, parking lots, roofs, awnings or other hard surfaces areas.
- · Hoses used for any purpose had to have positive shutoff valves
- Restaurants served water to customers only upon request.
- · Potable water was not to be used to clean, fill or maintain levels in decorative fountains
- Use of additional water was not allowed for new landscaping or expansion of existing facilities unless low water use landscaping designs and irrigation systems were employed.
- Water service connections for new construction were granted only if water saving fixtures or devices were incorporated into the olumbing system.
- Use of potable water for consolidation of backfill, dust control or other non-essential construction purposes was prohibited.
- Imigation of lawns, play fields, parks, golf courses, cameteries, and landscaping of any type with
 potable water would be reduced by at least the amount specified for outside use in the adopted
 rationing plan.
- Verified water waste as determined by the Water Department would serve as prima facie evidence
 that the allocation assigned to the water account is excessive; therefore, the allocation was subject
 to review and possible reduction, including termination of service.
- · Water used for all cooling purposes was to be recycled.
- The use of groundwater and/or reclaimed water for irrigation of golf courses, median strips, and similar turf areas was strongly encouraged.
- The use of groundwater and/or reclaimed water for street sweepers/washers was strongly encouraged.

In addition to water use prohibitions and directives specifically responsive to the drought, the SFPUC coincidentally was implementing long-term conservation programs, which also lowered water demands ouring the drought period (refer to the Demand Management discussion). Following the drought, several of the measures described above were adopted by San Francisco into permanent, on-going programs.

Water Management:

In addition to effecting reductions to water demands, the SFPUC also employed water management activities to control the severity of water shortages to its customers.

During the drought and for the first time in history, the SFPUC utilized a Delta supply within its system. The SFPUC imported water from the Delta through use of State Water Project South Bay Aqueduct facilities. The sources of water transferred included transfers via the California Emergency Water Bank, Placer Country and the Modesto Irrigation District. The waters were diverted from the South Bay Aqueduct into the SFPUC's San Antonio Reservoir and then treated and integrated into SFPUC's water distribution system.

The amount of water actually delivered to the SFPUC was constrained due to numerous factors including the lack of willing sellers, allocation procedures, lack of priority in use of the State transmission facilities, storage constraints in San Antonio Reservoir, and water treatment constraints within the SFPUC's system. The total water that was imported into the SFPUC's system amounted to a maximum of approximately 31,000 acrefeet in one year, and in total for the drought period amounted to 59,000 acre-feet.

The importation of additional water into the SFPUC's system allowed the continuation of a 25 percent system-wide rationing program as compared to a potentially higher level of rationing had the transfers not occurred.

System Response and Effects:

The system-wide goal of reducting water use by 25 percent was achieved. However, the reduction was not accomplished without cost or hardship.

To achieve its annual 25 percent system-wide rationing goal, the SFPUC targeted a reduction of indoor consumption by 10 percent and outdoor consumption by 60 percent.

Due to the nature of the allocation formula for water allotments and the level of system-wide reduction goals, instances occurred where individual users or wholesale water customers were burdened with up to twice the system-wide average in delivery reductions.

Some of the costs incurred by individuals, property owners and renters include.

- The cost of installing low-flow toilets, retrofit kits for toilets and showerneads, and special low-water use landscaping and irrigation systems
- The financial losses resulting from loss of lawns, plants and trees due to the 50 percent reduction in water available for imigation
- The cost of excess use charges (\$12,300,000 in excess use charges was billed to retail accounts in fiscal year 1991-92 alone)

The ability of SFPUC's retail oustomers to achieve a 25 percent reduction in the future is highly unlikely one to the "hardening" of water demands that occurred during and subsequent to the drought. The rationing programs implemented by San Francisco during the 1987-92 drought were measured by companison to calendar year 1987 water deliveries, i.e., pre-drought conditions.

During the 1987-92 drought San Francisco's retail and wholesale water customers implemented numerous conservation measures that have led to permanent per capita water usage savings. San Francisco's current

water demand is likely hardened as compared to the 1987 level of water demand. This situation leads to a conclusion that comparable rationing goals (e.g., up to 25 percent reduction) would be more difficult to achieve since the drought, and would require measures in excess of those implemented during the 1987-92 drought to achieve a comparable percentage of delivery reduction.

As the level of rationing increases, the economic and societal impacts become more severe. The SFPUC has first hand experience in attempting to employ rationing to levels, which are intolerable to citizens and businesses.

In 1991, water storage had deteriorated and the SFPUC was forced to immediately adopt a 45 percent system-wide rationing plan. It was proposed the reduction would be achieved through a 33 percent reduction to inside water use and a 90 percent reduction to outside water use.

San Francisco's plan for meeting its rationing goal included the following minimum and maximum criteria:

- Maximum Allocation for Single and Multi-family Residences. No single-family residence shall receive an allocation of more than 300 gallons per day: no multi-family residence shall receive an allocation of more than 150 gallons per day times the number of living units in the building.
- Minimum Allocation for All Residential Accounts. A minimum of 50 gallons per day per documented resident will be allowed. However, a minimum allocation will not be approved to increase an allocation above current usage absent a documented change in circumstances.
- Irrigation Services. Accounts classified for irrigation only will be reduced by 90 percent.
- <u>Commercial/Industrial Allocations</u>. Commercial and industrial allocations will be reduced by 32 percent. Hospitals and other health care facilities may be subject to lesser restrictions subject to verification that all conservation measures are in place; such approval shall require an on-site conservation inspection.
- <u>Allocations for New Accounts.</u> Initial allocations will be established at 50 gallons per day. These
 allocations will be re-evaluated after customers have installed retrofit kits provided by the San
 Francisco Water Department. After verification of installation, allocations will be calculated on the
 basis of the number of documented residents within a household, or, in the case of commercial or
 industrial customers, on the basis of business data supplied to the Department.

Additional water use restrictions and prohibitions were enforced:

- The washing of all automobiles, motorcycles, RVS, trucks, transit vehicles, trailers, boats, trains and airplanes was prohibited outside of a commercial washing facility.
- Exceptions to the above use restriction were windows on all vehicles and such commercial or safety vehicles requiring cleaning for health and safety reasons.
- Water used for all cooling purposes or for commercial car washes had to be recycled.
- The use of potable water on golf courses was limited to the irrigation of putting greens. The use of groundwater and reclaimed water was permitted when approved by the Department of Health.

- The filling of new swimming pools, spas, hot tubs or the draining and refilling of existing pools, etc..
 was prohibited; topping off was allowed to the extent that the designated allocation was not exceeded.
- The irrigation of median strips with potable water was prohibited. The use of groundwater and reclaimed water was permitted when approved by the Department of Health.
- The use of potable water for street sweepers/washers was prohibited. The use of groundwater and reclaimed water was permitted when approved by the Department of Health.

Public and commercial response to 45 percent rationing was overwhelmingly negative. During the first weeks after notification of the program, SFPUC received over 2,000 appeal letters per day. In the month before rationing was returned to 25 percent, 19,000 appeals, 12,000 telephone calls, and 1,500 walk-in complaints occurred.

Both the allocation levels and new prohibitions required to meet this level of rationing would have had a devastating effect on commercial enterprises. Some water uses would have simply been prohibited. Simply put, rationing had been taken to a level that was considered intolerable to citizens and had become economically disastrous.

RESOLUTION No. 88-0155

WHEREAS, The San Francisco Water Department obtains water from the reservoirs operated by the Hetch Hetchy Water and Power and from local Bay Area reservoirs; and

WHEREAS, Due to critically low supplies of water within the reservoirs and anticipated low levels of inflow into the reservoirs, such that unless consumption is decreased there may be insufficient water supplies for human consumption, sanitation and fire protection; and

WHEREAS, Decreases in water consumption may be accomplished by reducing allocations to the Water Department's wholesale customers and by imposing water use restrictions on the Water Department's retail customers, as set forth in the Water Rationing Rules and Regulations, issued on April 21, 1988 and attached hereto as Water Rationing kules and Regulations; and

WHEREAS, This Commission recognizes the need to declare a Water Shortage Emergency (Water Code Sec. 350, et. seq.) due to critically low water supplies now available, and the need for a reduction in water use by the San Francisco Water Department's Suburbow Wholesale Customers; and

WHEREAS, This Commission recognizes the need to adopt a Water Conservation Program (Water Code Sec. 375, et. seq.) due to the critically low water supplies now available, and the need for a reduction in water use by the San Francisco Water Department's retail customers; and

WHEREAS, The City of San Jose is, by Resolution 85-0256, a temporary and interruptible wholesale customer of the Water Department, and the Settlement Agreement and Master Water Sales Contract between the City and County of San Francisco and certain Suburban Purchasers in San Mateo County, Santa Clara County and Alameda County (Settlement Agreement) requires action by the Commission to interrupt service to the City of San Jose (Section 8.17); and

WHEREAS, The City of Santa Clara is, by Resolution 85-0257, a temporary and interruptible wholesale customer of the Water Department, and the Settlement Agreement requires action by the Commission to interrupt service to the City of Santa Clara (Section 8.17); and

WHEREAS, Additional funding in the amount of \$648,780 for FY 1988/89 has been identified by the Water Department for implementation of a mandatory water rationing program; and

WHEREAS, on April 21, 1988, the Water Department submitted to this Commission a Water Conservation Program; and

WHEREAS, The Conservation Program shall cease to exist in whole or in part at such time as the Commission finds that the supply of water available to the Water Department's service area has been replenished or augmented so that there are sufficient supplies to meet the needs of the Water Department's customers without the continued implementation of these measures; and

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1 hereby certify that the foregoing resolution was adopted by the Public Utilities Commission at its meeting of APRIL 22 1988

Secretary, Public Villities Commission

COLUMN DE SAN PRANCISCO

RESOLUTION No. 80-0155

WHEREAS, The recommended Water Conservation Program has received wide-spread public distribution; and

WHEREAS, Members of the public have been given an opportunity to, and have expressed their views on the recommended Water Conservation Program in a public hearing; now, therefore be it

 ${\tt RESOLVED},\ {\tt That}\ {\tt this}\ {\tt Commission}\ {\tt declares}\ {\tt a}\ {\tt Water}\ {\tt Shortage}\ {\tt Emergency};$ and

BE IT FURTHER RESOLVED, That this Commission adopts a Water Conservation Program; and

BE IT FURTHER RESOLVED, That this Commission approves the Water Conservation Program dated April 21, 1988 as amended April 28, 1988, and directs that it be placed in force on May 1, 1988; and

BE IT FURTHER RESOLVED. That it is not the Commission's intention to interrupt water service to the cities of San Jose and/or Santa Clara; however, pursuant to its obligation under the Settlement Agreement and Master Water Sales Contract this Commission authorizes the General Manager of the Water Department to interrupt water service to the cities of San Jose and/or Santa Clara; if necessary to achieve the required water saving, however, prior to actual interruption of service to either the City of San Jose or Santa Clara; the General Manager of the Water Department shall report to the Commission the need for interruption and receive affirmation from the Commission prior to institution of the interruption; and the Commission further directs the General Manager of the Water Department to mitigate the effect of the interruptions to the extent possible and consistent with the needs of San Francisco's permanent customers; and

BE IT FURTHER RESOLVED, That this Commission hereby authorizes the additional budget needs to be added to the Water Department's Conservation Programmatic Budget, thus amending the Water Department's budget request for FY 1988/89; and

BE IT FURTHER RESOLVED. That this Commission hereby designates Tuesday, May 24, 1988 as the date for a public hearing by the Public Utilities Commission for considering proposals for rate increases and additional charges for water service and water supplied by the San Francisco Water Department to retail customers; and

BE IT FURTHER RESOLVED. That this Commission hereby designates Tuesday, May 24, 1988 as the date for a public hearing by the Public Utilities Commission for considering proposals for rate structure adjustments for water service and water supplied by the San Francisco Water Department to wholesale customers; and

BE IT FURTHER RESOLVED. That the revenue requirements and an analysis of the rate increases, rate structure adjustments and additional charges be made available for public inspection and review beginning Monday, May 16, 1988 in Room 287, City Hall, San Francisco.

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I hereby certify that the foregor	ng resolution was adopted by the runne officies (commission
	APRIL 23 1983
at its meeting of	
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APPENDIX G

SAMPLE WATER SHORTAGE CONTINGENCY RESOLUTION

PUBLIC UTILITIES COMMISSION

City and County of San Francisco

RESOLUTION NO.	

WHEREAS, The San Francisco Public Utilities Commission (SFPUC) obtains water from the Hetch Hetchy Water and Power project and local Bay Area reservoirs; and

WHEREAS, The SFPUC has determined that a shortage condition exists because the projected available water supply is less than projected system-wide water purchases in the upcoming Supply Year beginning July 1, and

WHEREAS. In 2000 the SFPUC and Suburban Purchases adopted an Interim Water Shortage Allocation Plan (IWSAP or "Tier One Plan") and an Interim Water Shortage Allocation Plan Among Suburban Purchasers ("Tier Two Plan"); and

WHEREAS, The Tier One Plan describes the method for allocating water between the SFPUC and the Suburban (wholesale) Purchasers collectively during shortages caused by drought, and

WHEREAS, The Tier Two Plan describes the method for allocating the water made available by the SFPUC during shortages caused by drought among the Suburban Purchasers (individually), when the SFPUC determines that a system-wide water shortage due to drought exists; and

WHEREAS, In 2001 the SFPUC adopted a Retail Water Shortage Allocation Plan (RWSAP) as a guidance tool to be used for allocating water amongst Retail customers in the event of a water shortage due to drought; and

WHEREAS. The RWSAP details a three-stage program of action to be taken to reduce Retail water use during drought, with Stage 1 consisting of voluntary measures, Stage 2 of mandatory measures and Stage 3 of more severe mandatory measures; and

WHEREAS, Depending on the level of water demand and the desired objective for water use reduction, one, two or all three stages of the RWSAP may be required; and

WHEREAS, Staff has made the final determination of available water supply required by the Tier One Plan with the SFPUC's suburban (wholesale) water customers, including, among other things, stored water, projected runoff, water acquired by the SFPUC from non-SFPUC sources, inactive storage, reservoir losses, and an allowance for carryover storage; and

WHEREAS, The SFPUC has determined that the available water supply is insufficient and that unless water consumption is decreased there may be insufficient water supplies for human consumption, sanitation and fire protection needs; and

WHEREAS, Decreases in water consumption may be achieved by voluntary or mandatory conservation measures by Retail and Wholesale water customers; and

WHEREAS, Decreases in water consumption may be achieved by implementing the voluntary and or mandatory shortage allocation provisions of the Tier One Plan and the RWSAP; and

WHEREAS. Staff has, in accordance with Section II.C of the RWSAP, presented the water supply situation and other required information at a regularly scheduled Commission meeting for public input, and advertised this the meeting in accordance with the requirements of California Water Code Section 6066 of the Government Code; now, therefore be it

RESOLVED, That the SFPUC declares a Water Shortage Emergency pursuant to sections 350 et. seq. of the California Water Code; and be it further

RESOLVED, That the SFPUC directs staff to determine the amount of water allocated to the Suburban Purchasers collectively pursuant to Section 2.1 of the Tier One Plan, and to allocate the available water supply among individual wholesale water customers based on information received from the Bay Area Water Supply and Conservation Agency in accordance with Section 2.2 of the Tier One Plan, and the Section 2 of the Tier Two Plan; and be it further

RESOLVED. That the SFPUC directs staff to take all other necessary steps to implement the Tier One Plan, including but not limited to provisions related to establishment of monthly water budgets and the creation of water shortage bank accounts; and be it further

RESOLVED, That the SFPUC directs staff to take all necessary steps to implement the RWsAP, including Stage 1, Stage 2 and/or Stage 3 measures, as required to meet water use reduction goals based on reduced water supplies from the Regional Water System; and be it further

FURTHER RESOLVED [for mandatory rationing stages only]. That, in accordance with the IWSAP ("Ther One Plan") Section 4.1 and the RWSAP Section 11.B, the SFPUC adopts the following schedule of excess use charges applicable to its suburban (Wholesale) and Retail customers:

If Water Purchases Exceed the Shortage Allocation by:	The Excess Use Charge Multiplier is:
Up to 10.00%	2
10.01% to 20.00%	8
20.01% or more	20

I hereby certify that the foregoing resolution was adopted by the Public Utilities Commission at its meeting of

Secretary, Public Utilities Commission









